Communicating About Risk:

EPA and Asbestos in Schools

Draft Copy for External Review

Reviewers are asked to please provide comments
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Introduction

Few environmental issues have been the subject of such divided opinions, have such an unmistakable potential for health effects, or have so much at economic stake as asbestos. Regarded as a miracle fiber for centuries, asbestos is found in many consumer products, particularly as an insulator and fire retardant in public and commercial buildings. It became a liability, however, when public attention was drawn in the 1960s to scientific studies that linked exposure to high levels of asbestos fibers to several serious, sometimes fatal diseases.

The U.S. Environmental Protection Agency became involved with asbestos in the Agency's earliest days in 1970. Under the Clean Air Act of 1970, EPA designated asbestos as a cancer-causing substance and developed regulations to protect the public from exposure to asbestos fibers during the milling and manufacturing of asbestos products and when buildings containing asbestos are demolished or renovated. Other regulatory programs, largely under the Toxic Substances Control Act and the Asbestos Hazard Emergency Response Act, have kept EPA closely involved with protecting public health from exposure to asbestos. Most recently, EPA completed a decade-long rulemaking in 1989, banning the future production of most asbestos products used in America today.

Asbestos in schools has been a subject of particular concern. Tens of thousands of schools have been built since the mid-1940s when asbestos use became popular, and most contained insulation and other asbestos-containing products to protect student safety in case of fires. As information about harmful effects became available in later years, schools were high on the list of concern by Congress and EPA. Of greatest concern was the potential for exposure of school children to fibers released in the air, often during maintenance and custodial activities, or sometimes due to damage caused by school children themselves. Early surveys showed crumbling, friable asbestos found in some classrooms, hallways, gymnasiums and cafeterias.

This paper is a review of the role that EPA communications policies and information have played in asbestos-management decisions made by school administrators and local education agencies. EPA Administrator William K. Reilly commissioned the review after becoming concerned that school officials may have misunderstood the Agency's asbestos requirements and messages.

Communicating about environmental risk is often a complex task. Communicating about hazards where there are divided opinions on the extent of risk and the effectiveness and costs associated with control make it even more difficult.

Asbestos is a case in point. The hazards associated with asbestos, as with many environmental risks, come from exposure to the substance. If exposure is minimal, then the risk is minimal. When

the substance is found almost everywhere--in thousands, if not millions of locations--then the evaluation of exposure becomes quite complex. The message is made more complex when the various alternatives proposed to minimize exposure--removal, enclosure, or encapsulation, management-in-place--are factored in. Finally, add into the equation the costs of control--the asbestos abatement industry is a $4 billion per year business. Who bears the burden of paying these costs--businesses, industry, consumers, taxpayers?

Such issues are at the heart of the asbestos problem--along with improved science, public relations campaigns by building owners and the asbestos industry, and lawsuits from parties seeking damages that may exceed $100 billion. It is in this highly-charged atmosphere that EPA has had to communicate with a fearful public about asbestos.

A major focal-point of asbestos legislative and regulatory concern has been asbestos in schools. EPA's communications effort about asbestos, then, has focused, especially since the mid-1980s, on the nation's school officials, teachers and other employees, and parents.

Communications Review

In the summer of 1990, meetings with school officials, interactions with Congressional representatives, and a series of press reports led EPA Administrator William Reilly to be concerned that many school officials might have misunderstood EPA's asbestos requirements.

In particular, he worried that: (1) many schools might be spending large sums of money removing asbestos which could be safely managed in place; and (2) school officials engaged in these "unnecessary" removal actions thought removal was an EPA requirement.

To get to the bottom of the issue, the Administrator asked for a comprehensive internal review of communications in the asbestos-in-schools program. He wanted to know whether schools were making "informed" decisions about asbestos management, and whether there was a need to make EPA communications in the asbestos-in-school program clearer and more consistent.

What was necessary to find out, then, was a correct understanding of what the public thinks the Agency has been saying, how possible misperceptions about our messages may have been created, how EPA might have contributed to any of these misperceptions and what steps could be taken to clarify our messages. An obvious additional benefit of this study is to take what we learned in

communicating about a subject as complex and contentious as asbestos, and transfer our recommendations to improve EPA communications in other areas.

The review began in July, 1990 and was chaired by Lewis Crampton, EPA's Associate Administrator for Communications and Public Affairs. The Asbestos Communications Review Team included staff members from EPA's Offices of Policy, Planning and Evaluation; Toxic Substances; and Communications and Public Affairs. Most of the members had extensive experience in communications; some were experienced in policy and program evaluation; and several had specific experience in risk communication as well.

It was decided that several approaches would be used to examine various EPA messages to school officials and local education agencies, what these audiences had to say about EPA's asbestos policies, and how important a role EPA information played in schools' asbestos management decisions. From these approaches we sought to establish the basis for any misunderstanding about the Agency's asbestos messages.

Content Analysis. First, we wished to examine EPA's messages over time. The best approach was to analyze what the Agency has had to say about its policies--from notices in the Federal Register, testimony before Congressional committees, speeches of EPA officials, press releases, training forums with interested parties, and brochures, booklets and other guidance and informational documents. The content analysis covered from 1970 to May 1991 and focused on asbestos in schools, particularly at how EPA presented the asbestos danger and how the Agency communicated the need for asbestos controls in schools. The analysis also dealt specifically with parental and community reaction to the asbestos issue as it examined what EPA said, or didn't say, and how the messages evolved over time, especially as legislation changed.

To a lesser extent, the content analysis also examined how some concerned organizations and their publications reflected the EPA messages--whether they supported it, opposed it, or even distorted it. And it examined how EPA dealt with negative reactions to the Agency's views of the asbestos problem. The examination also included several accounts of how reporters and others have perceived EPA's messages, as recounted in newspaper and magazine articles and editorial comment.

Outreach. A second approach was the outreach effort to dozens of organizations with constituencies affected by EPA's asbestos programs. Meetings were held to discuss asbestos communications with organizations that represented public, religious and private schools, business, insurers, and labor interests. Some organizations chose to provide opinions on asbestos communication via phone conversations rather than in meetings.

Organizations were requested to participate in the outreach activity by invitation letters that included a series of asbestos communications questions. Documents were given to review group staff members by organizations' representatives during or subsequent to the meetings in which they participated. Some individuals declined to participate in discussions due to their organizations' having minimal, if any, involvement in the asbestos-in-schools program.

Survey and Interviews. A third approach used a specially-designed survey and telephone interviews to focus on how local education agencies made decisions about asbestos. The decision process was examined and mapped, dominant information sources were identified, and other factors influencing decisions were analyzed. Of particular importance to program management, the relative importance of information from EPA in these decisions was explored. A better understanding of the major factors influencing school decisions about asbestos management options assisted the communications review group to determine whether our current communication strategy is targeting the appropriate groups.

In addition, an examination of the primary messages local education agencies have been receiving over time from major information sources, including but not entirely limited to EPA, helped the review group determine if changes were needed in the current messages to deal with counter-balancing information from other sources and to address inconsistencies, either across sources or in EPA messages over time.

The findings in the interview/survey approach were based on several sources. First, the staff conducted in-depth interviews with 10 State AHERA (Asbestos Hazard Emergency Response Act of 1986) designees, three EPA regional asbestos coordinators, and EPA headquarters staff. Next, they conducted a telephone survey of 40 Local Education Agencies (LEAs) regarding the factors behind their choice of asbestos response actions. Lastly, they analyzed two reports prepared for EPA by outside contractors: a survey of seven states' implementation of AHERA, and a study which examined case studies of four LEAs during the pre-AHERA period.

What Did We Need to Know?

In order to respond to Administrator Reilly's charge to examine whether schools were making informed decisions about asbestos management and whether there was a need to make EPA communications clearer and more consistent, the task force concluded that it must seek to understand the role EPA information played in decision-making about managing asbestos risks. Several questions arose which could lead the review to the information it sought. The questions were organized according to various components of the often-used communications model of source, message, channel and receptor.

With regard to source, the communications review asked:

- What sources of messages about asbestos were local education agencies exposed to?
- Were the objectives and biases of those sources compatible with each other?

In looking at the actual messages transmitted by that source or sources, several questions are pertinent:

- What have been EPA's messages about asbestos?
- Were they clear and unambiguous? If EPA had several messages, were they compatible and consistent?
- Have the EPA messages been timely?

In examining the channels or medium of communication used by EPA, the questions were:

- How were EPA messages transmitted to audiences?
- Were the channels effective in reaching intended audiences?

Lastly the questions related to the receiver or audiences. These questions sought to understand how EPA information about asbestos assisted or hindered local education agencies in making asbestos management decisions:

- What were the major factors influencing school decisions about asbestos management options; How much did these factors vary and in what ways?
- Who was responsible for making decisions about school asbestos management options?

- What was the decision process they followed and what characteristics might account for significant differences in this process?
- What information sources did the audiences trust the most?
- Did audiences perceive EPA as a credible information source on asbestos?
- What effect did information from other sources (the media, interest groups) have on communication and interaction among the parties?

These questions, then, formed the backbone for the three approaches used to examine the Agency's messages and the audience's reaction and reliance on those messages, especially with regard to appropriate asbestos abatement options.

EPA's Asbestos Communications History

It is helpful to understand the dynamics among the major elements that contribute to EPA's communications about asbestos risks and managing those risks, especially as they relate to schools. The primary contributors to this dynamic, which follows a definite time-line, are:

(1) the increased Congressional concern reflected in new legislation;

(2) changing scientific evidence on asbestos and the amount of risk it presents; and

(3) an improving technical knowledge about such things as asbestos levels in buildings and the most effective ways of measuring, controlling, and abating asbestos.

While the primary focus of our communications review is an examination of the asbestos-in-schools issue, it is important to understand how these messages were received in the broader context of all communications about asbestos. The Agency's messages about asbestos in schools have not been transmitted in a vacuum. The reality has been that different legislative requirements and different EPA offices have sent messages about asbestos that appear similar but may have contained varying shades of requirements or guidance that have created some confusion or uncertainty in audiences about exactly what EPA's policy is or what guidance it offers in a particular situation. Compounding that greatly are the diverse messages about asbestos from various

organizations and businesses promoting their own information about asbestos hazards or safety. The diversity of these messages created the potential for huge misunderstandings at the local level where officials were being forced to make significant financial decisions within a context of conflict and doubt about eventual outcomes.

EPA has been communicating about asbestos for some 20 years. Its messages have always shifted to reflect the evolving nature of our understanding about the substance and how to prevent unnecessary exposure to it. The easiest way to view the Agency's changing emphasis in communicating about asbestos is to divide the messages into the following three periods--corresponding to changing legislative requirements:

1970-1985:	Raising Awareness About Hazards
1985-1988:	Implementing AHERA
1988-Present	Placing Options Into Perspective

While these periods are distinct for this analysis, it must be remembered that the messages did not undergo abrupt changes. In fact, the messages are often overlapping and do not necessarily conform directly to the legislative requirements. Often the distinctions among the messages are subtle and understated.

It is certainly easier, also, to examine messages in retrospect. An important thing to remember is the evolving nature of asbestos knowledge--all parties were constantly learning and having to react to new information and requirements. Research efforts constantly bring new facts--about monitoring, about levels of exposure, about the best ways to handle the problem. Asbestos and our ability to communicate about it are not static--they are constantly bringing new information to those interested in the material, whether from business or industry, worker safety, school administrator or public health official perspective.

The content analysis, the survey of local education agencies and the outreach efforts all assisted in confirming the evolutionary nature of the main messages. It must be remembered, too, that specific messages from certain offices--for instance, the exposure hazard message from the NESHAP office--changed little, if at all, over the entire 20-year period. But, without doubt, the factor that influenced EPA's evolving message the most was the perception in Congress that asbestos in schools was a full-blown environmental emergency. EPA's messages became a part of the intense interplay between conflicting scientific claims about asbestos and a clear political mandate to do something about what Congress perceived to be a national emergency.

Table 1 follows this discussion and lists the EPA asbestos messages by source and period, as determined by the content analysis of 1

pertinent legislation, regulations and guidance documents.

The First Period: Raising Awareness About Hazards (1970-1985)

The first phase, from early NESHAP rules of the Clean Air Act, through the early years of regulating asbestos under the Toxic Substances Control Act, and up to the debate leading to passage of AHERA, was a period where EPA primarily attempted to raise the public's consciousness about asbestos hazards. This raising of awareness was directed to state health and environmental agencies, building owners and operators, and particularly local education agencies.

In addition, a secondary message was that dealing with the asbestos problem was not to be seen as a federal bail-out program where the federal government would pay the costs of eliminating asbestos hazards. In this vein, much communication was directed to the building of capability at the state level to provide a training and certification capability.

The 1971 Clean Air Act listing of asbestos as a hazardous air pollutant and the ensuing 1973 rules sent a clear message that airborne asbestos fibers, if not controlled, could be a major risk to the general public. It established a "bottom line" approach to managing asbestos risks, since building owners realized that all friable asbestos materials must eventually be removed when a demolition or major renovation takes place. In fact, many building owners may have voluntarily removed asbestos materials following the 1973 rules in order to avoid possible long-term management or liability problems. Listing asbestos as a hazardous air pollutant clearly encouraged a "removal is inevitable" mindset among some building owners and school officials, and may have contributed to a mutated EPA message that removal is required, or at least desired, in all circumstances, not just during demolition and renovation cases.

Throughout the 1970s, EPA vigorously publicized enforcement cases of NESHAP violations, due in part to a belief by federal and state officials that compliance with the demolition and renovation rules was inadequate. Enforcement cases proposing large fines, prosecutions, jail terms or loss-of-standing on federal contract lists were often the subject of Agency press releases and press conferences designed to raise the visibility of NESHAP regulations and discourage future violations.

EPA's 1982 Schools Inspection & Notification regulation was intended to increase health protection by requiring identification of friable asbestos. This was expected to lead to voluntary safe

working practices when dealing with these materials. Additionally, notification of building occupants and parents was meant to increase pressure on local education agencies to manage asbestos safely.

The results of this 1982 rulemaking were mixed. Compliance with the rule was very low. At best, if one disregards the mandated deadline for compliance and the notification requirement, it was estimated that fewer than 50 percent of the local education agencies complied with most aspects of the regulation. To make matters even worse, upon investigation by EPA, many inspections that were performed were done poorly by people with little or no training.

Moreover, EPA probably contributed to a perception that removal of asbestos was the Agency's policy when penalties for violations of the Inspection and Notification rule were often eliminated if violating school officials would agree to remove the asbestos.

Whatever the shortcomings of the Inspection and Notification rule, it had a significant communications impact. The perceived threat to school children appears to have increased public awareness of asbestos hazards. EPA's 1982 rule brought the asbestos problem home to millions of parents and school officials.

Two years later, EPA and asbestos were again brought to the attention of school administrators by Congressional passage of the Asbestos School Hazard Abatement Act's loans and grants program, which directed the Agency to provide financial assistance to needy schools with the worst asbestos hazards. To school administrators and the public, the ASHAA legislation and the loans and grants could have been interpreted as an EPA funding program for general asbestos removal since most of the serious problems were best resolved by removal.

The primary guidance documents during this period, Asbestos-Containing Materials in School Buildings (Orange Book) and Guidance for Controlling Friable Asbestos-Containing Materials (Blue Book), focused mainly on hazards and health effects as well as basic practices and procedures in an attempt to make people aware of the potential threat to human health posed by asbestos. The building of a state infrastructure of qualified asbestos inspectors and abatement personnel signalled schools and others that the federal government did not intend to pay the bill to solve the asbestos problem in the United States.

The content analysis and anecdotal information collected through the outreach effort lead to the conclusion that EPA emphasized removal as the primary means of controlling asbestos risk.

The Second Period: Implementing AHERA (1985-1988)

This second phase, from the publication of the definitive guidance on asbestos in buildings--Guidance for Controlling Asbestos-Containing Materials in Buildings (Purple Book)--through the passage of AHERA and all of EPA's efforts to implement that law, was a period of intense communications activity resulting in four primary messages--all revolving around the new Congressional requirements that schools must inspect for asbestos, notify parents and occupants, develop management plans and put those plans into effect.

These messages built upon the earlier phase and expanded their scope to deal with the new AHERA requirements. Issuance of the Purple Book in 1985 was a major point of departure in the transition to more balanced treatment of the removal/management-in-place alternatives. For the first time, given new knowledge, EPA offered a new element in the asbestos message--improper removals may be an even greater hazard than if undamaged asbestos were left alone.

While many readers may have missed the new element, some did not. A reporter for The Washington Times, called the change in EPA's position a "major shift in policy." In a lengthy article appearing on August 1, 1985, the day the Purple Book was released, the reporter quoted an EPA official as saying that "If [building owners] have [asbestos] and it is in good condition, they should leave it alone and watch it for signs of deterioration."

Several activities contributed to this new emphasis in the Agency's asbestos message that would become larger in the future. First, Agency studies, including a major study of school abatement, began to suggest that removal did not always or permanently clean fibers from a building, and, in fact, could elevate asbestos levels if improperly done.

Second, new asbestos detection technology allowed researchers to better identify asbestos levels in buildings. EPA developed a new protocol as part of the AHERA program for the use of transmission electron microscopy. For the first time, asbestos was reliably identified and measured outside a manufacturing setting.

Third, a 1986 EPA air monitoring study found that prevailing levels in buildings, governed by in-place management programs, were very low, in fact, comparable to those levels found outside the buildings. This suggested that in-place management might be as effective; indeed, perhaps even more effective, in limiting exposure to building occupants than some removals.

Next, asbestos scientists, control professionals and public health officials increasingly began to recognize and accept in-place management as an acceptable substitute for large-scale removals, based in part on EPA's research. Improvements were also being made in in-place management technologies.

Finally, anecdotal information began to grow, from the new ASHAA loan and grant program and from other sources, such as educational prublications, suggesting that unnecessary removals might be on the rise. EPA became increasingly interested in making school officials and building owners understand that in-place management was often a sound approach.

While this new emphasis was not immediately and universally heralded as a major change in the Agency's asbestos policy, the modification in the message signalled the beginning of an awareness on the part of EPA that removals of asbestos in good condition may be taking place. Too often, building officials have "panicked and rushed into" an asbestos-removal program that has caused more contamination than leaving the asbestos alone, an EPA official was quoted as saying in 1985. Increasing awareness would eventually lead the Agency to a message years later that asbestos management-in-place may often be the best abatement option. In short, the Agency was responding appropriately to new information learned in the laboratory and in the field.

But this gradual shift in program emphasis ran counter to developments that were occuring back on Capitol Hill. In Congress, sentiment ran high in late 1985 and 1986 for additional federal action on the problem of asbestos in schools. Congressional language alone played a large part in having the asbestos problem viewed as a public health crisis. The terms "hazard" and "emergency" together in the title of AHERA were a clear message to many audiences--including local school officials and parent/teacher organizations as to how Congress viewed the nature of the asbestos-in-schools risk. There were other factors as well--especially for local education agencies. Incredibly difficult timetables for EPA to set the new rules, and for local education agencies to hire contractors or train people to conduct inspections, prepare and review management plans, and then implement those plans, sent a powerful message that school officials must place this activity among their highest priorities and increased pressures for action throughout the system.

Almost every interview and outreach conversation we conducted with local education agencies and associations representing their interests and those of teachers, maintenance and custodial workers, felt that the compressed deadlines for implementing AHERA requirements put immense pressure on school officials to act quickly and decisively. And, in many cases, the simplest and cleanest action that could be taken was removal. For a number of reasons, asbestos removal made sense to some local decision makers, notwithstanding its high initial costs.

Compounding this situation was the fact that the guidance EPA issued was often perceived as not lending itself to the type of decisions school administrators desired. They often looked to EPA to tell them simply to remove asbestos or leave it in place. EPA's guidance, originating from school officials themselves and asbestos experts, was less definitive. It was predicated on qualitative factors applied on a case-by-case basis by local decisionmakers. There were some situations which readily called for removal, for example, because the condition of the asbestos and potential for significant exposure warranted it, and there were other cases where the asbestos was in perfectly good condition and presented only a small opportunity for exposure. The vast majority of school asbestos decisions, however, may have fallen into a more nebulous middle ground where more discretion was exercised by an on-the-scene expert, trained and accredited to identify asbestos conditions and abatement procedures. This lack of certainty and definitive direction appears to have frustrated many school administrators about EPA's advisory role.

Because of the AHERA requirement for accredited persons and the complex, judgmental nature of the asbestos-assessment process, which did not lend itself to a simple EPA directive, one of the Agency's primary messages during this period, then, was that only accredited experts could make proper and informed judgments about asbestos inspection and management activities, since they best understood the hazards and appropriate control techniques.

There were several reasons for this. First, EPA's experience under the 1982 inspections rule showed that many of the inspections were poorly conducted by inadequately trained personnel. An accreditation and certification program at the state level would correct this problem by building credibility into the inspections and recommendations, right up front. Second, Congress, through AHERA, designated that any requirement to inspect, develop management plans, or abate asbestos hazards must be completed by accredited people. Finally, the school officials, technical experts, and others serving on EPA's regulatory negotiation determined that general standards were not appropriate for such a site-by-site hazard. On-site assessment would best lead to the ultimate objective of minimizing exposure to asbestos.

The second period, then, is best characterized by the AHERA "rush to judgment" which forced difficult, costly decisions to be made in the context of emergencies and hazards. While EPA attempted to keep the asbestos-management options open in its written and oral communications with LEAs, the focus was not on removal vs. management-in-place, but on the stringent AHERA requirements and such issues as the necessity for accredited inspectors and contractors.

The Third Period: Placing Options Into Perspective (1988-Present)

This third phase, from EPA's 1988 Report to Congress on Public and Commercial Buildings, through the recent scientific debates over fiber types and sizes, up to the issuance of the "Five Facts on Asbestos in Buildings," has been a period of further examination, consolidation and balancing in order that school officials see the full array of options for managing asbestos risks.

In 1987 and early 1988, there was pressure, reminiscent of that during passage of AHERA, behind EPA and Congress to make decisions about whether an AHERA-like law should be passed for the other 700,000 public and commercial buildings in which EPA estimated asbestos is present.

While feeling this pressure, EPA was also hearing and seeing other factors. First, there were more complaints about the inordinate costs for asbestos removal and the impact of these removals on school budgets and insurance and bonds issues. There was also the growing body of information obtained by the asbestos research effort, discussed above, that asbestos air levels in public and commercial buildings appeared to be very low.

The 1988 Report to Congress had the effect of halting Congressional movement toward passage of AHERA-type legislation for public and commercial buildings. It created a "cooling-off" period before additional legislative and regulatory action proceeded to deal with asbestos and risks. And it highlighted the fact that EPA was emphasizing its position that management of asbestos-in-place, from a public health perspective, could be preferable to removal.

Unfortunately, the 1988 Report to Congress received very little publicity in the popular press, and much of its impact may have been lost on the public. Another asbestos-related activity was taking place and receiving the publicity--extending the AHERA deadlines. It had become quite clear that some local education agencies were having severe problems meeting the original inspection, management plan and implementation deadlines.

EPA's primary actions during this period probably gave off mixed messages to the public. First, the Agency's request for additional time to examine the extent of the asbestos problem in other public and commercial buildings was seen by some as an Agency retreat from its public health position. Second, the publication of two scientific articles in 1989 and 1990 may have begun casting doubt in the public mind about the hazards of asbestos and the perceived appropriateness of EPA's asbestos policies. Certainly these articles touched off a roaring controversy in scientific and legal circles

about asbestos health effects, and this debate spilled over into the asbestos-in-schools program.

In addition, EPA completed in July 1989, a decade-long rulemaking within the Office of Toxic Substances and declared a ban on almost all future uses of asbestos in American commerce. Though the ban and phase-out was taken largely as a pollution-prevention measure since safe alternatives existed, most people would naturally see the ban as reinforcing EPA's long-standing message that asbestos was hazardous.

Then, shortly after the ban and phase-out announcement, the Agency held a press conference to announce a new enforcement initiative against several major school boards and asbestos contractors for violating the NESHAP demolition and renovation rules. This too, could be seen by some as running counter to an attempt by EPA's asbestos-in-schools program to increase visibility for managing asbestos-in-place when in good condition, rather than removing it. It offered a concrete example of an agency delivering mixed messages on the same pollutant at virtually the same time.

While EPA did not change its position about the hazards of asbestos, it certainly increased its emphasis on in-place management as the preferred alternative, as demonstrated by the 1990 publication of Managing Asbestos in Place (Green Book) and the release of the "Five Facts" testimony and open letter. The Agency's position about the hazards of asbestos, based on the current state of scientific knowledge about various asbestos-related diseases and causes has remained consistent, and is shared by all federal agencies and the National Academy of Science. EPA has, however, continued to move to clarify the asbestos management options available to school administrators by emphasizing that identifying and managing asbestos-in-place may be preferable and safer than removing asbestos in good condition.

Schools, finally, may have been less confused about AHERA requirements and EPA's policy guidance than anecdotal information suggests. One of the findings of the review describes the information obtained from the recently completed formal review of the AHERA program. Statistically valid surveys suggest that the large majority of AHERA response actions taken by schools were consistent with the Agency's management-in-place philosophy. This is true, too, of actions now scheduled in management plans.

The evaluation found that schools identified about 70 percent of the individual suspect asbestos materials covered by the evaluation (representing about 87 percent of the total quantity of material) and that most of the response actions (85 percent) taken to date by schools involve managing asbestos in place.

The evaluation also showed that implementation of important elements of the AHERA program needed to be improved. For

example, about 17 percent of the inspections were classified as deficient in identifying, assessing, or quantifying all the suspect asbestos. An additional 21 percent were judged as having serious deficiencies. Further, many school maintenance and custodial workers were not receiving proper training to prevent them from becoming engaged in unprotected and inappropriate work practices regarding asbestos.

The third period, leading to the present day, illustrates how easily messages can interfere with one another in an area as complex as asbestos risk management. The asbestos-in-schools program took forceful efforts to place asbestos management options into perspective--finally emphasizing management-in-place as the preferred option in most instances.

The evolving emphasis in EPA's messages to local officials are best illustrated in the following table:

Table 1

EPA Asbestos Messages As Determined by Content Analysis of Laws, Regulations, and Guidance Documents

Year/ Period	Source	Message
1971	EPA promulgates listing under Section 112 (National Emission Standard for Hazardous Air Pollutants (NESHAP) of the Clean Air Act	* Asbestos is a hazardous air pollutant.
1973	EPA promulgates NESHAP-Asbestos rules under Section 112 of the Clean Air Act	* Asbestos is a threat to human health, a carcinogen. * Asbestos must be removed prior to building renovations and demolitions. * Visible emissions during building renovations and demolitions are banned. * EPA must be notified of building renovations and demolitions.

1979	EPA issues Asbestos-Containing Materials in School Buildings (Orange Book) under the Toxic Substances Control Act	* Asbestos is threat to human health. * No safe level of exposure is known. * Exposure threatens school children because levels in schools are higher than other buildings: in-school exposure is added to by additional exposure in later life: in-school activities can damage asbestos, release fibers. * Removal is the abatement option of choice. * Removal of asbestos in buildings is not mandated.
1982	EPA promulgates Asbestos-In-Schools Rule under the Toxic Substances Control Act	* Schools must inspect for friable asbestos, notify parents, employees if found, and where it is. Abatement is urged, not mandated.
1983	EPA issues Guidance for Controlling Friable Asbestos-Containing Materials (Blue Book) under the Toxic Substances Control Act	* Asbestos exposure is dangerous. * No safe exposure level is known. * School children are especially at risk for same reasons given in Orange Book. * Removal, while not required, is probably the method of choice because it eliminates the problem once and for all.

1984	Congress enacts Asbestos School Hazard Abatement Act, P.L. 98-377 (ASHAA)	* Grants and loans are available to "needy" schools for asbestos abatement, strengthening message about asbestos dangers. * Because the law gave priority to funding for most dangerous situations, ASHAA funding from EPA has gone largely to removals. * An indirect message may favor asbestos removal.
1985	EPA issues Guidance for Controlling Asbestos-Containing Materials in Buildings (Purple Book) under Toxic Substances Control Act	* New risk message points out that presence of asbestos in building does not necessarily endanger occupants if asbestos is in good condition and not disturbed. * Prudent building owners should limit the exposure of occupants, though this is not required. * Asbestos levels in schools appear higher than in other buildings. * School children are at greater risk because of greater lifespan. * Management-in-place is dealt with at some length for the first time, although guidance says removal has the widest applicability, and is only permanent solution. * Abatement actions should be designed and performed by accredited persons.

1986	Congress enacts Asbestos Hazard Emergency Response Act, P.L. 99-519 (AHERA)	* Asbestos is a health threat; no minimum exposure levels are established. * Danger is emphasized by the words "Hazard" and "Emergency" in title of the law. * Due to concern about exposure, school inspections, abatement planning, and management plan implementation must meet tight deadlines. * LEA plans should be State-approved. * Purple Book remains definitive guidance until further guidance is issued by rule-making process. * EPA must establish a model contractor accreditation program for States to follow.
1987	EPA promulgates rules under AHERA	* Schools must inspect for all asbestos in their buildings, plan for its management. * Inspection and planning must be performed by accredited personnel, contractors or consultants. * Removal is not mandated or precluded; the decision up to the LEAs.
1988	EPA issues LEA Guide under AHERA	* Again, removal is not mandated or precluded; the decision is up to the LEAs. Text describing various situations lists removal as one of only two options in three of five examples. * Operations and maintenance (management-in-place) is emphasized.

1988	EPA issues "100 Questions" Guide to schools	* Guide answers most frequently asked questions about asbestos in schools but does not address the issue of removal vs. management-in-place.
1988	EPA issues Report to Congress on Asbestos in Public and Commercial Buildings, under AHERA	* Danger of exposure is higher in schools than in other buildings. EPA will continue to concentrate attention on schools, not other buildings. * Asbestos exposure in commercial buildings is a potential hazard but needs more study. * Studies in federal building sample show low levels; comparable to outdoor levels. * Mortality projections are extremely low.
1989-90	EPA promulgates amended NESHAP-Asbestos rules under Section 112, Clean Air Act	* Asbestos is a danger to human health; a hazardous air pollutant. (Same as earlier NESHAP-Asbestos messages) * Removal requirements for renovations, demolition are reemphasized; new rules for transporting asbestos debris from demolitions/renovations are described.

1989	EPA issues ABCs of Asbestos in Schools booklet under AHERA	• Asbestos fibers can cause serious health problems, but there is much uncertainty about risk from low-level exposure. • Asbestos properly managed in place poses little risk. • AHERA rarely requires removal. • Poorly performed removals can increase risk. • LEA makes decision on whether to remove or manage-in-place.
1989	EPA promulgates Asbestos Ban rules under Toxic Substances Control Act	• Ninety-four percent of all future manufacture of asbestos products are banned over period of seven years. • Ban will reduce unreasonable risk to human health; safe substitutes are available.
1990	EPA issues "Five Facts about Asbestos" under TSCA and AHERA	• Exposure levels in public buildings, based upon available information, pose negligible risk to building occupants, although it might be higher for maintenance workers. • Management-in-place is the most desirable option to control exposure. • Removal of asbestos, if improperly done, can increase risk. • EPA does not require removal, except for demolitions and renovations.

1990	EPA issues Managing Asbestos in Place (Green Book) under AHERA	• (The risk message is based on the Five Facts). • AHERA does not require removals. • Green Book does not replace the Purple Book, but expands operations and maintenance (management-in-place) information. • Removals may be required by NESHAP-Asbestos rules during renovation or demolition projects.
1990	EPA issues letter to schools	• Schools can revise their asbestos management plans based on upcoming re-inspections. • Management-in-place should be the keystone of asbestos-abatement programs.
1990	EPA issues Environmental Hazards in Your Schools under various laws	• In section on asbestos, previous information is reviewed.
1990	EPA issues "Advisory for the Public" under TSCA and AHERA	• "Five Facts" are expanded to emphasize a) low levels of exposure in most schools, b) dangers of arbitrary removal, c) benefits of management-in-place.

FINDINGS

The Asbestos Communications Review Team made the following Findings, many of which represent a synthesis of information developed from more than one approach:

1. The school asbestos management decision process is a complex, multi-step process involving many different parties and multiple information sources.

2. School officials consider many legitimate factors besides health risks in making choices among asbestos management options.

3. Involvement by parents and staff in school asbestos management decisions tends to be infrequent and reactive.

4. EPA's asbestos-in-schools program is very dependent on communications because of the necessity for site-specific decisions about asbestos management.

5. There is some public confusion about EPA's main messages and policies under the asbestos-in-schools program. EPA has inadvertently contributed to the confusion by issuing evolving--and sometimes what may appear to be conflicting--messages over time.

6. There are many important factors outside EPA's control which have contributed to public confusion about the hazards of asbestos, proper risk management, and the Agency's asbestos message.

7. In light of the importance and difficulty of asbestos communications, EPA could have given greater priority to communicating its messages about asbestos to the general public and interested parties at various points in the process.

8. The formal evaluation of the AHERA program suggests, contrary to anecdotal evidence, that wholesale removal of asbestos in good condition has not been the norm since schools began their AHERA management plans in the late 1980s.

One:

The school asbestos management decision process is a complex, multi-step process involving many different parties and multiple information sources.

As Figure 1 illustrates, there are 12 basic steps in the school asbestos management decision process. Most of these steps are shaped by the requirements of the AHERA rule. These steps involve many different participants from both inside and outside a school's administration. Since information is an important "input" to the decision process, these 12 steps provide many opportunities for different information sources to affect the decision process. Since school officials rarely have the technical expertise to make asbestos management decisions on their own, reliance on outside sources of information and expertise throughout this process is often very high.

Two:

School officials consider many legitimate factors besides health risks in making choices among asbestos management options.

School decisions about asbestos management are influenced by many factors. These factors include health risks but also expand to non-health issues such as concerns about long-term accountability, concerns about the complexities and cost of implementing a long-term program to manage asbestos in place, and the desire for an "asbestos-free" school. Such concerns are legitimate reasons for undertaking asbestos management measures which go beyond those required for simple protection of human health, even if this translates into "unnecessary removals." When asbestos management actions occur for these reasons and not because of inaccurate information about EPA requirements, those decisions can be called "informed," even though the removal was not necessary from a public health perspective.

The question of whether or not there have been a large number of unnecessary removals of asbestos in the nation's schools remains unanswered, although the evaluation of the AHERA program indicates the incidence of asbestos removal in the nation's schools was not high. Reliable data on the rate of asbestos removal before AHERA are not available. Much of the anecdotal evidence suggests that there may have been widespread removals before AHERA was passed.

People often assume the availability, or lack of availability, of funds is a major influence on school asbestos management decisions. Specifically, the assumption is that when schools have the money to finance removals, they choose to remove. EPA's surveys of State AHERA designees and selected school officials suggest that these assumptions are inaccurate. The role of funding appears secondary. That is, schools choose to remove, or not to remove, based on

other factors than simple availability of funds. When schools are already inclined to remove asbestos because of some of the factors discussed above, then the availability of funds becomes an important factor.

Three: **Involvement by parents and staff in school asbestos management decisions tends to be infrequent and reactive.**

The conventional wisdom asserts that parents have played a key, and widespread, role in forcing schools to remove asbestos, regardless of the material's condition. However, other than a few anecdotes, the evidence shows that this type of action on the part of parents, or staff, is the exception rather than the rule. These groups in general have played a minor role in school asbestos management decisions. The AHERA evaluation supports this finding.

At the same time, it should be noted that reactive involvement, however rare, can be very powerful when it does happen. There is evidence that suggests a handful of angry parents can and have forced schools to make dramatic changes in their asbestos management decisions. The reasons for parental involvement in these instances are varied, and may include technical, economic, or political issues.

Four: **EPA's asbestos-in-schools program is very dependent on communications because of the necessity for site-specific decisions about asbestos management.**

Asbestos control experts and school officials have agreed with EPA that uniform standards can not be effectively applied for asbestos in schools and other buildings because of the importance of and variability of site-specific issues. This has forced EPA to rely heavily on a communications approach which emphasizes providing asbestos control professionals, school officials, and others with the information and training they need to make informed asbestos management decisions based on the condition of asbestos in particular school buildings.

While this approach is necessary and offers school officials greater control and on-site flexibility in their asbestos management decisions, it can also create some tension between EPA and the regulated community. Some school officials, who rarely have technical backgrounds in hazardous waste management, want directive, step-by-step asbestos management requirements. Being told what to do and when to do it, in some ways, would make asbestos management an easier task for them, if only because it would eliminate the need to independently obtain, analyze, and

choose among technical options and recommendations, which may be complex. AHERA's requirements to establish a system of trained, accredited asbestos professionals were designed to deal with this problem of site-specific guidance.

Adding to the communications challenge, school officials look to several sources of advice--EPA regional asbestos coordinators, headquarters experts, and State officials as well.

Five: **There is some public confusion about EPA's main messages and policies under the asbestos-in-schools program. EPA has inadvertently contributed to the confusion by issuing evolving--and sometimes what may appear to be conflicting--messages over time.**

Shifting messages about preferred management options. A careful reading of EPA documents shows the Agency has consistently maintained, both pre- and post-AHERA, that schools do not have to remove asbestos, even though the NESHAP rule may require removal when a school is being renovated or demolished. Nonetheless, it has been possible at many points in time to get the impression, from EPA documents and actions, that removal is the preferred option. For example:

EPA Guidance. The first two asbestos-in-schools guidance documents issued before AHERA (the Orange book, published in 1979, and the Blue book, published in 1983) emphasized that removal is the only "permanent" solution to asbestos management problems. The Blue book characterized removal as "always appropriate, never inappropriate." Both the Orange and Blue books explained the potential problems with other asbestos management options without mentioning the possible risks associated with improperly executed removals.

The message shifted slightly with the Purple book (published in 1985). Here, in some sections of the document, in-place management is placed first on some of the listings of options. In previous documents, removal was always listed before in-place management, subtly reinforcing the Agency's emphasis on the attractiveness of removal. However, this is the only major shift from the preceding guidance. The larger message in the Purple book continued to be that removal is the only permanent solution to asbestos problems. The book repeats the Agency's observations on the disadvantages of non-removals, and again does not emphasize the potential hazards associated with improperly executed removals, given the limited information at the time.

While the Purple book was released before AHERA was passed, it served as the main guidance document for schools to develop their initial management plans under AHERA.

In 1990, EPA published the Green Book. This document focuses exclusively on Operations and Maintenance (management-in-place) and emphasizes that improper removals can cause significant health risks. Some parties outside EPA have characterized the Green Book as a 180-degree shift in Agency policy. A careful reading of this document indicates that there is a new emphasis, although not to the degree that Agency critics charge. For example, the Green Book strongly emphasizes the hazards associated with improper removals, and stresses that in-place management may often be a schools best asbestos alternative. However, this message was presaged in 1989 in an earlier publication, the ABCs of Asbestos, where potential problems with poorly executed removals were noted.

Enforcement Policy. Before AHERA, there was an asbestos inspection rule requiring schools to identify asbestos in their buildings. When school compliance with this rule proved extremely low (i.e., less than 50 percent), senior EPA officials stepped up a rhetorical campaign (mainly through public speeches) emphasizing the risks of asbestos and the need for compliance with the inspection rule. EPA also began to publicize enforcement actions against schools which did not comply with the rule. These actions may have fed public perceptions that removal was the best way to avoid problems with EPA.

Conflicting messages perceived from different EPA programs. The mandates and main messages associated with other EPA programs may sometimes appear to the regulated community to conflict with those from the asbestos-in-schools program. For example, EPA's Office of Air & Radiation, implementing NESHAP-Asbestos requirements under the Clean Air Act, calls for removal of asbestos prior to demolition and renovation in buildings. The main message one receives under NESHAP-Asbestos rules is that asbestos is dangerous and needs to be removed prior to renovation or demolition; management-in-place is not an option once NESHAP-Asbestos requirements apply. The Office of Toxic Substances, operating under the authority of the Toxic Substances Control Act, recently banned further manufacture of asbestos-containing products in the United States. This ban may appear to send the same larger message that NESHAP-Asbestos does: asbestos is dangerous, and we need to get rid of it. Both messages can be seen to conflict with the more complex message of the asbestos-in-schools program, where site-specific management decisions must be made and often may include management-in-place instead of removal.

Outreach efforts also confirmed that inconsistencies sometimes appeared among advice given in the Region, the State, and by Headquarters.

Opportunities for improvement. While EPA recently took steps to make its current policy regarding removal of asbestos in school buildings clearer (e.g., the "Five Facts" as presented in

Congressional testimony in early 1990 and reiterated in other Agency documents), there still is both a need and an opportunity to further clarify the Agency's position.

Six:

There are many important factors outside EPA's control which have contributed to public confusion about the hazards of asbestos, proper risk management, and the Agency's asbestos message.

Congressional actions. The ASHAA program, which provided federal funds for school asbestos management projects, specifically targeted high risk situations. Many of the projects funded through ASHAA have been asbestos removals precisely because of the nature of the project selection process which targets the most serious hazards, which generally require removal. Thus, federal funding actions under ASHAA may have fed public perceptions about the overall risks posed by asbestos-in-schools and could have led to perceptions that EPA requires, or encourages, removals.

Shortly after the advent of ASHAA, Congress passed the AHERA legislation. AHERA contributed a sense of imminent danger to the asbestos-in-schools situation by calling itself an "emergency response act." The sense of urgency was augmented by the tone of the Act's descriptions of the risks to children. Specifically, the Act heavily emphasized the potential dangers of asbestos exposures and continually reiterated the need for reducing exposure with statements such as:

> "The danger of exposure to asbestos continues to exist in schools and some exposure actually may have increased due to the lack of Federal standards and improper response actions."

Although the tone of this quote is not inflammatory, in the context of an "emergency response act" it conveys a sense of urgency and crisis. This atmosphere of high risk and emergency was augmented by the extremely short implementation deadlines imposed by the Act. For example:

- EPA had only six months to develop, from scratch, a national model plan for training and accrediting asbestos inspectors, planners, and abatement contractors.
- The Agency had only 12 months to promulgate rules to implement AHERA; conventional rule-making normally takes at least 18 months;
- Schools were only given 12 months to develop their management plans, a task most of them were ill-prepared to meet.

All of these factors may have contributed to public perceptions that (1) the risks from asbestos in schools are extremely high and (2) the most prudent reaction is to completely rid the schools of the danger by removing the asbestos.

The outreach effort confirmed that the most prudent reaction may also consider such issues as insurability and liability for the school.

Public conflict about the basic asbestos message. The long-term, chronic health risks posed by asbestos are difficult to explain in simple terms. This difficulty has been considerably exacerbated by the severe polarization of the public debate about asbestos risks. Two of the major issues of concern are (1) what the risks from asbestos are (and how they might vary depending on exposure, fiber type and size), and (2) what federal regulatory policy should be adopted in light of those risks.

There are many stakeholders in the asbestos debate, and over time these groups cover the full spectrum of beliefs, as illustrated by Figure 2. Some cluster at either the "one fiber can kill" position or the "most fibers are safe" position. Each of these positions calls for a different regulatory approach than EPA currently advocates. In contrast, EPA has taken a middle-ground position best described as "keep low levels low," and has continued to assert that its current approach to asbestos-in-schools is the most advisable.

As the controversy about health risk receives increased media attention, more and more people may begin questioning the seriousness of the risks posed by asbestos, and the appropriateness of the management approach EPA has taken under AHERA. Different stakeholder groups are investing considerable resources in publicizing their views on asbestos, and EPA has not always been able to respond quickly to clarify the Agency's position or correct inaccurate information. The polarization of the health risk debate makes EPA's communications tasks both more difficult, and more important.

School dependence on multiple information sources. Since school officials rarely have the technical expertise, either themselves or on their staff, to deal with asbestos issues themselves, they must look outside their school system for information and technical advice about asbestos management options. The fact that there are multiple voices competing for their attention does not make this task any easier.

As Figure 3 illustrates, there are many different message "senders" in the asbestos arena. Each of them has different perspectives and interests. While school officials rely on EPA as a major information source, they use other sources as well, including private consultants, contractors, state government, and the popular press. The messages school officials receive from these sources sometimes compete and conflict with EPA's. Ultimately, this can create a lot of confusion and "noise" in the communications

network, making EPA's message less audible.

The challenge for EPA is to adopt communication strategies which better emphasize what EPA's message is, and how (and why) it may differ from messages received from other sources. The caveat is that, regardless of how well EPA improves the approach to communications, the quality of information given to school officials from other sources not under EPA's control will remain a limiting factor on the overall impact of EPA's communications efforts.

Insufficient communications networks. AHERA applies to all elementary and secondary school systems -- large and small, public and private. However, there is no single communications network for EPA to tap into to allow it to reach all of these schools. Over time, the Agency's links with public schools and large private school systems have become fairly strong, but there are still problems with distributing informational materials to small private schools, sometimes because they come into and go out of existence very quickly, and others because not all States have strict licensing requirements for small private schools. Even when the latter institutions receive EPA AHERA materials, they are more likely to have problems complying with AHERA requirements, due to funding and staffing constraints. In addition, in some areas of the country there is a strong school culture (mainly among private sectarian schools) against federal intervention in school affairs. This further complicates the effective transmission of EPA's AHERA messages.

Seven: **In light of the importance and difficulty of asbestos communications, EPA could have given greater priority to communicating its messages about asbestos to the general public and interested parties at various points in the process.**

In comparison with other EPA programs, the asbestos-in-schools program has devoted considerable time and energy to its communications effort, especially since the passage of AHERA. The program has faced many obstacles to effective communications. Some of these have been outside the Agency's control; others have been created by EPA actions, such as the NESHAP and asbestos ban rules, which might be perceived as contrary to the Agency's in-place management message. The asbestos-in-schools program staff faces a very complicated communications challenge. They have made a concerted and credible effort to explain the requirements of AHERA and to provide risk management guidance to a large and varied constituency. They have accomplished this effort in the face of difficult deadlines, serious funding constraints, and limited statutory flexibility.

Nevertheless, despite its considerable efforts, EPA must share some of the criticism for the asbestos communications problem.

The Agency did not always assign sufficient resources to respond immediately to dissonant messages broadcast by other sources (representing their own interests regarding asbestos) or develop and publish key guidance in a timely fashion. It appears that some school officials did not fully understand their roles and the respective role of EPA guidance in the development and implementation of the management plans. Some officials felt that they received the important guidance only after they completed their plans and then did not feel the plans could be legally changed. While many attempts were made to inform those officials of their responsibilities (see the background information on AHERA outreach and communication to schools), the dissonant voices, the unrelenting press of program business, and the early ambiguity and late delivery of some guidance materials may have had an impact on the overall effectiveness of the outreach effort.

As a result, EPA's asbestos messages have not always reached the people at which they were aimed, did not always reach them in a timely manner, and did not always succeed in conveying the message in a clear and unambiguous manner. Despite the encouraging results of the AHERA evaluation which indicate that schools are <u>not</u> spending large sums of money removing asbestos which can be safely managed in place, some schools have conducted unnecessary removals and some school officials did not understand that EPA has offered a management-in-place option, where appropriate, since 1985.

Eight: **The formal evaluation of the AHERA program suggests, contrary to anecdotal evidence, that wholesale removal of asbestos in good condition has <u>not</u> been the norm since schools began their AHERA management plans in the late 1980s.**

School officials may have been less confused about AHERA requirements and EPA's policy guidance than anecdotal information suggests. It is generally accepted that AHERA has been successful in achieving its initial objective of conducting inspections and developing management plans. By the AHERA deadline of July 1989, fully 94 percent of all public and private schools had completed their initial AHERA inspections and developed management plans for their buildings. Certainly an important part of the EPA message--inspect, evaluate, and correct--has been getting through.

Second, EPA's formal evaluation of the effectiveness of the AHERA program, completed earlier this year, indicates that the fundamental elements of the program were successfully executed. With regard to the subject of this review--whether schools were under the mistaken impression that removal of asbestos materials represented EPA's policy guidance--it appears that the vast majority of AHERA response actions taken by schools were

consistent with the Agency's management-in-place philosophy. This leads us to the conclusion that if removals were taking place, they were exceptions to the rule and did not represent a widespread practice. While this does not account for activities prior to the passage of AHERA in 1986, nor does it account for possible removals from buildings other than schools, the evidence clearly indicates that school officials have largely understood the EPA management-in-place message, along with the requirements for inspections, management plans, and accredited personnel.

The evaluation, based on statistically significant surveys, found that:

- Schools identified about 70 percent of the individual suspect asbestos materials covered by the evaluation, representing about 87 percent of the total quantity of material.

- Most of the response actions (85 percent) taken to date by schools involve managing asbestos in place.

In addition, a survey of school principals showed that parents and teachers did not appear to panic upon learning about the presence of asbestos in their schools.

RECOMMENDATIONS

Some of the lessons learned from EPA's experience with communications in the asbestos-in-schools program have implications for EPA's approach to similar risks. Asbestos-in-schools is not the only environmental problem which does not easily lend itself to conventional command/control regulation. For example, indoor air in general, and radon specifically, are two examples of environmental problems which call for flexible, case-specific approaches and an emphasis on communications rather than regulation of ambient air contaminants. The lessons we learn from communications in the asbestos-in-schools program may help EPA improve its communications efforts in these and similar areas where regulations by themselves will not accomplish the Agency's risk management goals.

1. EPA should (1) continue its efforts, begun with the "Five Facts," to explain the Agency's interpretation of available health risk data and to obtain better information about those risks; and (2) explore the desirability of developing and distributing an asbestos-management-priority list designed to help schools target their asbestos-management activities.

2. EPA should make a greater effort to communicate messages that are consistent across the agency.

3. EPA should communicate its key messages in a more forceful and timely manner.

4. EPA should routinely pretest and evaluate its communications and make sure they are clear and unambiguous and achieving their desired effect.

5. EPA should give risk communication a much higher priority as a risk reduction tool.

One: **EPA should (1) continue its efforts, begun with the "Five Facts", to explain the Agency's interpretation of available health risk data and to obtain better information about those risks; and (2) explore the desirability of developing and distributing an asbestos-management-priority list designed to help schools target their asbestos-management activities.**

The original version of the "Five Facts", delivered by EPA's Assistant Administrator for Pesticides and Toxic Substances, Linda Fisher, in Congressional testimony in June 1990, acknowledges that there is controversy about the degree of risk posed by different asbestos fibers. The Five Facts go on to state that:

(1) EPA has adopted a prudent approach to asbestos regulation by assuming that all fibers are equally potent.

(2) While some sources have suggested that exposure to chrysotile or common white asbestos may be less likely to cause some asbestos-related diseases, various scientific organizations, including the National Academy of Sciences, support EPA's more prudent regulatory approach.

This message needs to be expanded and repeated as long as the degree of risk posed by asbestos remains a focal point of public controversy. The following points should be stressed:

(1) EPA is aware of the controversy about the relative risk posed by different asbestos fibers.

(2) EPA has taken what it sees as a prudent regulatory approach given the nature of the risk information currently available.

(3) EPA's approach is supported by respected scientific authorities; and

(4) EPA is and will continue to conduct additional studies (e.g., the Health Effects Institute-Asbestos Research effort) to ensure that its policies continue to be based on the best scientific information available.

Secondly, school officials are sometimes uncomfortable with the degree of individual discretion which must be exercised in determining what asbestos-abatement options are most appropriate in individual circumstances. EPA has provided guidance on these matters, but the need for site-specific decisions appears to be consensual. At the same time, the AHERA rule provides some descriptive information which is more directive than the guidance and specifies what should be done under certain circumstances. It may be helpful to include copies of these descriptors (as they are, or modified) in future AHERA mailings.

Two: **EPA should make a greater effort to communicate messages that are consistent across the agency.**

EPA is one agency and it should act and speak with one voice. The fact that the agency has multiple programs which operate somewhat independently and which are charged with implementing many different laws does not excuse the agency from communicating messages which are not consistent or at least compatible across programs. The problem of inconsistency that was found in this analysis is not just an asbestos problem; it is an Agency problem.

Audiences receiving EPA messages about risk do not stop to make distinctions among the Agency's various programs. When EPA sends out messages from several different offices which may conflict either explicitly or implicitly, it dilutes the impact of each of the messages, no matter how carefully each has been crafted and communicated. It also damages the Agency's credibility.

However simple the recommendation to be consistent may seem in principle, it is not simple in practice. The facts of bureaucratic life often make it difficult to achieve complete coordination in a large and complex organization. Ordinary admonitions do not work. Heavy-handed clearance procedures are expensive to operate and can slow operations to a crawl. A happy medium needs to be found.

EPA has recently created a series of regulatory "clusters." Staff from different programs who are developing regulations for the same industries and/or substances are developing their proposals jointly. This approach needs to be applied in more instances than just new regulations. An "asbestos communication cluster" with representatives from the Office of Toxic Substances, the Office of Air Quality Planning and Standards, the Office of Solid Waste and the Office of Communications and Public Affairs would be a good prototype.

The Office of Communications and Public Affairs presently coordinates major communications efforts across the agency. However, it does not have adequate resources to review all publications. It was by chance rather than routine review that a publication on asbestos from one office giving a message that appeared to conflict with the message from another was discovered on its way to the printing shop during the course of this project. While there had been technical coordination among the offices, there was not an overall communications review. The Office of Communications and Public Affairs does not routinely review all publications for this type of consistency because its does not have the staff to do so without creating an unacceptable bottleneck. This situation must be corrected.

Where different statutory mandates, program requirements or other imperatives make it necessary to send what might otherwise appear to be inconsistent messages, the reasons should be clearly stated. Similarly, where statements represent an evolutionary change in emphasis, a concerted effort should be made to acknowledge and explain the apparent differences.

Three: **EPA should communicate its key messages in a more forceful and timely manner.**

When EPA has an important message that can affect many precious lives and dollars it should make sure that message is clearly heard by all affected parties. The Agency's communications need to get the attention of audiences that have many different issues on their minds and need to avoid being drowned out or otherwise altered by communications on the same issue from other parties.

For many issues, the Agency's communications strategy is often limited to the publication of major documents and press releases. Oftentimes, however well meaning and precisely drafted, EPA's messages have not reached the intended audiences in their intended form and have not been timely.

For important issues such as asbestos, EPA should generate more interpretive materials for affected parties and distribute them more widely and quickly. In addition to major technical guidance documents there should be more short pamphlets which are intended to reach broad audiences with specific messages. Messages to narrow, targeted audiences should also be developed. A special effort should be made to have articles by EPA officials on changed program emphases or new regulations published in trade and technical publications instead of leaving it to others to interpret and comment on them, as has often been done in asbestos and on other environmental problems.

These efforts should not be limited to top officials; official at all levels should be making more personal efforts to communicate major messages. Throughout the process the agency should strive for repetition and reinforcement. The agency should not assume that because it has said something once that the message has been successfully transmitted.

There are many appropriate occasions for such efforts. Outreach for new regulations and changes in program emphasis should be given special priority, and should be accomplished quickly. Major enforcement and funding decisions should also be candidates for special priority communications, so that they are properly understood by interested parties and do not have unintended consequences. An example of the latter instance is EPA's asbestos grants program. The fact that nearly all the funds go for removals rather than management-in-place is because the law requires that grant awards be made for only the most serious cases, where removal is often necessary; it is not, as some have thought, because EPA necessarily favors removal over management-in-place.

Another occasion for clear, forceful and timely communication is when other information sources inaccurately depict key issues and requirements. EPA needs to make a greater effort to follow what others are saying and promptly respond to inaccuracies as quickly as possible. EPA's shortcomings in this

regard are not limited to asbestos; indeed, there is no evidence to suggest that the pattern here has been substantially different from the Agency norm.

Constant coordination with all message senders is also important to avoid variances in the messages coming from Regions, Headquarters and States.

Effective, accurate communications is a normal part of progressive program administration. In most instances, no special occasion is needed for a well-schooled and aware communications effort. Nor, in many instances, should major additional resources be required. Clear, forceful and timely communications should simply be a part of working smarter and total quality management.

Four: EPA should routinely pretest and evaluate its communications and make sure they are clear and unambiguous and achieving their desired effect.

When EPA says something, there should be no mistaking what it is saying. On asbestos or on any other Agency issue, it should not be possible to get more than one message, especially from a single publication.

The most important step that EPA could take to this end would be to pretest all important documents with target audiences, and make changes to improve the clarity of the message and messages. The Agency spends a great deal of money each year to project the economic impact of proposed regulations. Yet, somewhat surprisingly, EPA does very little to gauge the clarity and likely impact of proposed publications. The Office of Policy, Planning and Evaluation has recently published a handbook on pretesting. Many of the methods described are not particularly expensive or time consuming. EPA program offices should use them.

Pretesting should not be confused with the present external review system, which involves interested offices from within the Agency and from outside. This type of review is entirely legitimate and necessary. However, what frequently happens when the comments all come back is that extensive qualifying language is added to satisfy all the reviewers. The result is often that the publications end up in a state of terminal blandness--or present mixed messages. The apparent attractiveness of "on the one hand, on the other hand" should be balanced against the need for clarity. If important qualifying language must be added, it too should be pretested.

Another way that mixed messages slip into publications is in the form of disclaimers that have sometimes been put in the front of

publications on asbestos and other subjects, to the effect that the document has been prepared by a contractor and EPA does not necessarily stand behind everything in it. It is recognized within the Agency that liability, not accuracy, is the driving force in these instances, however, to the reader, no one knows where EPA stands when this happens, and the Agency looks like it doesn't really know the subject. This practice should be discontinued. If EPA is not sure about some of the details, the text of the document should explain which details are uncertain and why.

Finally, when a major publication has been in circulation for a reasonable amount of time, such as a year, it should be evaluated to find out if it is having the intended effect. EPA rarely takes this step. The prevailing attitude is that once the Agency has spoken, that the job of communication has been completed. In fact, the result is that EPA misses out on the opportunity to learn whether the particular document in question or any new documents need to be improved. As with pretesting, this step need not be expensive or time consuming.

Five: **EPA should give risk communication a much higher priority as a risk reduction tool.**

At the root of each of the foregoing recommendations is EPA's clear need to assign a higher priority to communication as a risk reduction tool. This need exists throughout the Agency, not just in the asbestos-in-schools program. In fact, despite the concerns observed in this study of asbestos communications, there is reason to believe that greater attention is given to communication in this program than in many others.

Historically, communication has frequently been an afterthought at EPA. Important decisions have been made and then they have been communicated. Communication comes afterwards. Moreover, rarely is communication considered to be itself a front-line tool of risk reduction, in the sense that traditional regulations and now economic incentives are considered to be front-line tools. And, when it turns out that communication is the key element in a program, it is often not recognized and treated as such. There are those at EPA who recognize the importance of communication, but the general culture of Agency staff is technically-oriented and not communication-oriented. EPA needs to stop treating communication as a poor and unworthy relative.

This recommendation is supported not only by the findings of this project. The EPA Science Advisory Board, in its recent report, Reducing Risk: Setting Priorities and Strategies for Environmental Protection, made a similar recommendation. While acknowledging the importance of traditional regulations

and enforcement, the Board emphasized that "the long-term reduction of environmental risks will require EPA, and the nation as a whole, to use a far broader range of tools." Along with economic incentives, the Board stressed the importance of information as a risk reduction tool.

Operationally, this recommendation means that communication needs to be given both greater resources and management attention at all levels, particularly at the technical staff level in the program offices. Only then can messages be made consistent across the Agency. Only then can messages be pretested and evaluated to make sure that they are clear and unambiguous to their intended audiences and having their desired effect. And only then can communication be used to its full effect as a risk reduction tool.

Appendix A (Outreach)
to Communicating About Risk: EPA and Asbestos in Schools

Background Information

An outreach effort, an endeavor to meet in person with representatives of the many organizations affected by the asbestos-in-schools program, was used to gain firsthand opinions about EPA's communications on asbestos.

Organizations invited to participate in the outreach project received written information about the review's purposes prior to their involvement in meetings or their provision of oral or written comments to the Agency. Organizations' representatives thus learned that the review's purposes were to:

1. Examine what EPA and other organizations have said about asbestos;

2. Determine whether the many asbestos communiques have confused rather than enlightened people on what they and their organizations should do to minimize health threats posed by asbestos;

3. Ensure further EPA-initiated communications on asbestos are clear and understandable to the audiences for whom they are intended.

The organizations also learned--in advance of meetings--that primary questions being asked in the review were:

- What guidance or other information has EPA distributed that has aided or hindered communication or interaction between affected parties such as school boards, administrators, contractors, teachers and parents?
- What incentives or disincentives may influence selection of an appropriate asbestos abatement option?
- What affect does information on asbestos from mass media and interest groups have on communication and interaction between affected parties?
- What steps should be taken by EPA and others to improve communication and interaction between affected parties?

Participants in Outreach

Organizations that participated in outreach meetings and/or provided oral or written information used in the review include:

Agudath Israel of America
American Association of Christian Schools
American Association of Elementary School Principals
American Association of School Administrators
American Federation of Teachers
Asbestos Information and Research Coalition
American Insurance Association

American Insurance Services Group
Council for American Private Education
Environmental Roundtable
Laborers - Employers Cooperation and Education Trust
National Education Association
National School Boards Association
National Parents Teachers Association
Occupational Health Foundation
Service Employees International Union
Sheet Metal Workers International Association
United Brotherhood of Carpenters and Joiners
Workplace Health Fund

Attachment 1 to this Appendix contains more detailed information on the outreach effort, e.g., representatives at meetings, the dates of those meetings and telephone conversations and when documents were provided or correspondence sent EPA as part of the review.

General Observations

Constituencies represented in the outreach effort felt that EPA has made a worthwhile effort to address asbestos as a risk to public health and most particularly, the health of children in the nation's public, parochial and private schools.

Constituencies recognized problems that have affected the asbestos-in-schools program. Those problems included:

- o conflicting information on health risks of asbestos exposure;
- o virtually-impossible-to-meet deadlines;
- o inadequate funding resources for schools and EPA;
- o inexperienced and unregulated contractors;
- o Congressional "shock" language such as in the title of the Asbestos Hazard Emergency Response Act;
- o few well trained people that schools could employ or contract with to perform legislatively mandated work; and
- o an initial lack of infrastructure and expertise in schools and parent organizations to analyze asbestos abatement options and then carry out the maintenance and/or removal projects effectively and economically.

Despite the asbestos-in-school program's problems, the majority of constituencies agree that many difficulties have been overcome and the Agency's work to make schools free of the risk of asbestos is commendable.

Observations on Communications

School Organizations

- have mixed perceptions of what EPA's message has been on what to do about asbestos in schools. Some believe that EPA created a fear about asbestos that was not matched by clear explanations from the Agency of the options available to schools to mitigate or eliminate asbestos risk. Other school organizations always understood that in-place management was an option to removal. (The message to schools was cluttered very likely because all federal funds for asbestos remediation were required to be used for removal).

- want and need to get information from the Agency in a more timely fashion and on a more consistent basis. Specific requests pertained to getting updates on asbestos program activities, reinspection requirements, grant programs, and clarification on approved methods to change management plans. Schools also indicated that problems of inconsistency of responses from EPA headquarters and regions and States needs resolution.

- have struggled with pragmatic problems in dealing with asbestos in their schools. Those problems include: very tight budgets; insurance premiums too high or insurance even unavailable from external sources for management-in-place of asbestos; perceived fear of EPA levying large fines (causing some schools to forego insurance coverage in favor of asbestos removal); State regulation of insurance causing multi-district school system coverage problems; small school systems not having personnel and resources required to evaluate and employ qualified, well-trained inspectors and contractors; State regulations that require trained personnel--not volunteers--to handle school maintenance chores and states lacking reciprocal agreements to cover certification and recertification of workers.

- feel EPA's outreach with school organizations has worked well and effectively to inform and educate their constituencies. EPA was praised for its "100 Questions," "The ABC's of Asbestos," and "Environmental Hazards in Schools" publications. Both the Purple Book and the Green Book are regarded as excellent, however, the information was needed earlier than it was available. One organization felt that the "slant" of the Green Book differed from the Purple Book. Another organization hoped that the EPA would involve more organizations--representing the very small schools--in its outreach efforts.

- recognize that custodial and maintenance workers require specialized training. One organization has distributed training programs to about 1,000 schools, however, that effort--based upon the U.S. having 120,000 schools--is not likely to have met the total training need. No Spanish or other non-English-language training materials appear to exist for schools' custodial and maintenance workers who may experience difficulties in

reading and comprehending English.

- o want EPA to provide help in determining the risk-ranking of environmental hazards--in addition to asbestos--to students' health.
- o are aware of EPA statements made about asbestos in Congressional hearings but appear unaware of asbestos information communicated by the Agency--of interest to their constituents--in the Administrator's speeches.

Insurance Organizations

- o before the passage of ASHAA and AHERA, had stopped providing prospective coverage for asbestos exposure, began providing insurance that specifically excluded any coverage for past or future exposures for schools as well as other organizations.
- o indicate that schools that currently have property casualty coverage likely have policies that exclude asbestos exposure.
- o agree that removal of asbestos could make schools more attractive as candidates for property insurance coverage but not for bodily injury coverage against asbestos exposure.
- o support the statements made in EPA's Five Facts on Asbestos.

Business and Industry Interests

- o believe that the media and the general public will not distinguish between asbestos risks in schools, other public buildings, and homes.
- o believe, in general, that EPA has changed its message to state more correctly that managing asbestos-in-place is a sound option. They--representatives of building ownership, real estate, asbestos product manufacturing and insurance organizations--agree that EPA's communication effort is now on the right track.
- o agree that information on EPA's asbestos program was needed before it was available.
- o consider that documents produced by the asbestos program--particularly the Green Book--are excellent.
- o agree that EPA processes to involve groups affected by asbestos legislation have worked quite well. Business interests recommend that if no Agency arbitration specialist is available to manage consensus building on critical asbestos issues that a qualified negotiator be contracted with to lead necessary discussions.
- o regret that the Administrator's statements on asbestos did not get sufficient attention in mass and specialized media.

Labor Organizations

- believe that asbestos risk can be explained in a non-threatening way; that the high risk caused by exposure to deteriorating asbestos must be communicated; and that the terms used to explain risk be acceptable in a public health lexicon.

- state that the message emphasis has been changed. The management-in-place emphasis ignores the fact that ultimately asbestos must be removed for health protection and pollution prevention purposes.

- criticize the lack of information available about the Health Effects Institute - Asbestos Research project, its scope, its funding sources and its methods for selecting literature review panel members. Labor organizations believe EPA breached the peer review process on the Green Book and undercut the asbestos consensus group effort. Labor believes a qualified negotiator is required to lead asbestos discussions among organizations with divergent views.

- agree that the Green Book contains much good information but has problems with some of its content, primarily with information contained in the book's forward, which was not peer reviewed and which contains an inaccurate reference (from Labor's perspective) to negligible risk. Labor recommends that the Green Book be recalled or revised and that any work on the Occupant's Guide cease until problems on the Green Book content are resolved. Labor is dissatisfied also with the content of the Asbestos in Your Home publication (a joint product of EPA, the American Lung Association, and the Consumer Products Safety Commission) It, too, Labor would like to see recalled. The content of the Environmental Hazards in Schools booklet was praised.

- state that national training standards for workers must be set and enforced.

- think that Administrator's statements--from a communication perspective--have been mainly right. Agree with Administrator's insistence upon sound science guiding EPA's work.

Attachment 1 to Appendix A (Outreach)
to Communicating About Risk: EPA and Asbestos in Schools

OUTREACH EFFORT - Participants

Agudath Israel of America - Telephone Conversation - March 12, 1991 - Debra Jacobs

American Association of Christian Schools - Meeting - February 19, 1991 - Reverend Terry Bachur, Reverend Theodore E. Clater and Dr. Malcolm Cumming - Letter - March 8, 1991 - Reverend Theodore E. Clater

American Association of Elementary Schools - Telephone Conversation - January 24, 1991 - Edward Keller, Ph.D.

American Association of School Administrators - Meeting - January 4, 1991 - Letter - February 8, 1991 - Joyce Hill

Asbestos Information and Research Coalition - Meeting and Documents Provided - November 6, 1190 - Edward J. Gorman III and Paul Hefferman, Letter - December 6, 1990 - Paul Heffernan, Document Provided February 12, 1991 - Edward J. Gorman III

American Insurance Association - Meeting - March 1, 1991 - James L. Kimble and Martha Hamby - Meeting - James L. Kimble - May 1, 1991

American Insurance Services Group - Telephone Conversations - May 8 and May 14, 1991 - Mickey Jones

Council for American Private Education - Meeting - January 12, 1991 - Letter - February 25, 1991 - Greg D. Kubiak

Environmental Roundtable - Meeting - November 7, 1990 - W. R. Brick, Jr., Robert Bell, Jr., John Biechman, Judy Black, Francis Bouchard, Leslie Cheek, III, Cam Collova, Dennis R. Connolly, Jim Dinegar, William Edwards, Jack Ericksen, David M. Farmer, Paul Fiduccia, Margaret Hathaway, Lisa Hickey, William Holley, Sarah Hospodor, Jacquelyn M. Johnson, Lisa Kill, James L. Kimble, Edward S. Knight, Roger N. Levy, Kenneth Y. Millian, D. Kenneth Patton, Bobbie Perkins, Dennis M. Ross, Rhond Roth, Bruce Roznowski, Kenneth D. Schloman, Edlu J. Thom, Jim J. Tozzi, St. Clair J. Tweedie, Ann vom Eigen, John F. Welch, Yvonne Zoomers. Letter - November 15, 1990 - Kenneth Y. Millian and D. Kenneth Patton

International Association of School Business Officials - Letter February 25, 1991 - Clark J. Godshall, Ed.D.

Labor-Employer Cooperation and Education Trust - Meeting - November 21, 1990 - Karen Jordan

National Education Association - Meeting - January 30, 1991 - Joel Packer

National Parents Teachers Association - Meeting - January 30, 1991 -Carolyn Henrich

National School Boards Association - Meeting and Documents Provided - December 19, 1990 - Katharine Herber

Occupational Health Fund - Meeting and Documents Provided November 21, 1990 - Don Elisburg and Scott Schneider

Service Employees International Union - Meeting and Documents Provided - November 21, 1990 - Bill Borwegan

Sheet Metal Workers International Union - Meeting and Document Provided - November 21, 1990 - Lynn MacDonald

United Brotherhood of Carpenters and Joiners of America - Meeting and Documents Provided - October 19, 1990 - Edward J. Gorman III

United States Catholic Conference - Meeting - December 13, 1990 Sheila Bailey, G. Patrick Canan, Reverend William F. Davis, OSFS, and Megan Doyle. Letter - December 26, 1990 - Reverend William F. Davis

Workplace Health Fund - Meeting and Documents Provided - October 19, 1990 - Sheldon Samuels

Appendix B (Content Analysis)
to Communicating About Risk: EPA and Asbestos in Schools

A CONTENT ANALYSIS OF DOCUMENTS ON ASBESTOS FROM EPA AND OTHER SOURCES

Contents--

I. INTRODUCTION:

An important part of all EPA programs is how the Agency communicates with the public about them. Two of the most important issues requiring clear communication in the context of any environmental problem or program are (1) the degree of threat to human health and the environment and (2) the applicable laws and rules designed to protect those at risk. This chapter reviews the efforts of EPA and others to communicate about these issues in the case of the EPA asbestos-in-schools program in particular and in public and commercial buildings in general.

For a number of years, EPA (and to a lesser extent OSHA and CPSC) has been communicating about the asbestos risk and asbestos risk abatement through legislation and regulations, guidance documents and pamphlets, news releases, speeches and Congressional testimony by Agency officials, and participation in various forums and training programs with interested parties. Because a major focal point of asbestos regulatory concern relates to asbestos-in-schools, much of EPA's asbestos communication effort has been directed at the nation's school officials, teachers and other employees, and parents.

For this reason, this content analysis focusses on asbestos-in-schools, although, obviously, this issue of asbestos in all public buildings is germane because schools are public buildings even though for program and statutory purposes the Agency must deal with them separately. Within this focus, the content analysis looks particularly at (1) how EPA presented the asbestos danger and (2) how the Agency communicated about the need for removing asbestos from schools or using some other abatement approach. The analysis also deals specifically with (3) parental/community reaction to the asbestos issue as it examines what EPA said--or didn't say--and (4) how the messages changed over time, especially as legislation changed. It also looks at (5) how concerned organizations and their publications reflected the EPA message--did they support it, oppose it, or even distort it?, and how the Agency dealt with negative reactions to EPA's views of the asbestos problem. The analysis covers what the most current EPA asbestos guidance document calls "EPA's approximately 11 years experience in considering public input and fine tuning policies on managing asbestos-containing materials in buildings."

II. WHAT THE CONTENT ANALYSIS REVIEWED

The content analysis looked at two kinds of federal documents. These include

"enabling documents"--Acts of Congress and regulations concerning asbestos promulgated by EPA or OSHA since the early 1970s, and guidance or informational publications designed to interpret the rules and, in some instances, to provide detailed instructions on their implementation. The EPA rules originated with the Office of Toxic Substances (OTS), the Air Program's Office of Air Quality Planning and Standards (OAQPS), and the Office of Solid Waste (OSW). OSHA also promulgated rules. Guidance and information materials originated with OSHA, OAQPS, OTS, OSW, the Office of Communications and Public Affairs (OCPA) and OSHA. Some were produced in cooperation with outside organizations such as the National Education Association, the National Parent-Teachers Association, the National School Boards Association, and the Association of School Administrators. These covered a number of different aspects of asbestos-in-school problems.

In addition, the content analysis reviewed a number of news releases, pamphlets, backgrounders produced by OCPA, the EPA Journal, specialized educational trade association publications and legislative bulletins, Congressional testimony by EPA officials and speeches by the Administrator and others, and articles that appeared in a variety of specialized and general magazines and newspapers.

The review included the following:

A Legislation, Regulations, and Reports to Congress

* U.S. Occupational Safety and Health Administration standards for private sector worker exposure to asbestos, first promulgated in **1972** and subsequently revised and expanded to include specific standards for private sector workers doing asbestos abatement among other things, as well as subsequent EPA workplace standards for public sector workers.

* NESHAP Air Emission Standards for Hazardous Air Pollutants; Asbestos Regulations applying to building renovation and demolition involving friable-asbestos containing materials. First published in **1973** and amended several times, most recently in **1990** (to include more specific rules about transporting and disposing of asbestos) after it is removed.

* Friable Asbestos-Containing Materials in Schools, Identification and Notification, the "Asbestos-in-Schools Rule promulgated in **1982** under TSCA which established the inspection and notification requirements.

* Asbestos School Hazard Abatement Act of **1984** (ASHAA) Public Law 98-377, **August 11, 1984**, which established a loan and grant program to assist financially needy schools with the abatement of serious asbestos hazards, and rules related to this.

* Asbestos Hazard Emergency Response Act of **1986** (AHERA, Public Law 99-519), **October 11, 1986**, which established the model contractor accreditation program, and required promulgation of rules for school asbestos inspection, management, and abatement, as well as a report to the Congress on asbestos-containing materials in public and commercial buildings.

* Asbestos-Containing Materials in Schools, Final Rule and Notice, published in **October, 1987**, which spelled out the AHERA requirements in considerable detail in terms of deadlines, abatement and management methods, requirements for accredited abatement inspectors, management advisors, and contractors.

* EPA Report to Congress, "EPA Study of Asbestos-Containing Materials in Public Buildings," the **February, 1988**, report which included for the first time new scientific studies about asbestos in public buildings and recommended further study before development of any legislation or rules related to asbestos in public buildings other than schools. In the report, EPA cites the various studies as a major reason for opposing a regulatory program to control asbestos exposure in public and commercial buildings.

* Asbestos: Manufacture, Importation, Processing, and Distribution in Commerce Prohibitions, Final Rule, issued in **July, 1989**, which promulgates a phased ban, over 7 years, of nearly all remaining asbestos uses and products from manufacture, importation, and processing.

* Asbestos NESHAP Revision, including Disposal of Asbestos Containing Materials Removed from Schools: Proposed Rule Revision (This was finalized in **November, 1990**). It spells out the requirements contractors removing asbestos from schools or other buildings must follow to protect workers and the public from exposure while transporting the waste and disposing of it.

B. Guidance Publications

* Asbestos-Containing Materials in School Buildings, Parts 1 and 2 (The **Orange Book**), issued by OTS in **March 1979** to support the fledgling EPA technical assistance program to help schools and other building owners establish asbestos identification and control programs in their facilities. The two volume publication describes the asbestos threat, where the substance can be found in schools, what can be done about it by way of abatement, and where to get further information. It is the first EPA publication to deal with asbestos in great detail, and contains considerable material on the potential dangers of asbestos. Subsequently, the 1982 EPA Asbestos-in-Schools Rule required that one copy be available in all the administrative offices of every school.

* Guidance for Controlling Friable Asbestos-Containing Materials in Buildings (**The Blue Book**), issued by OTS in **March, 1983**, is to supplement the previous guidance with recent experience and new information on asbestos control. In the executive summary, it says:

> "For those readers who previously have been involved in the Asbestos-in-Schools program, the guidance offered will serve as a review and update of familiar issues. For those confronted with the problem of controlling asbestos for the first time, the document will identify the critical issues, introduce information on asbestos for the first time, and direct the reader toward the structured development of an asbestos control program."
>
> Like the Orange Book, it emphasizes the dangers of asbestos.

* Asbestos Waste Management Guidance--Generation, Transport, Disposal, issued by the Office of Solid Waste (OSW), not OTS, in **May, 1985**, is written primarily for those involved in disposing of asbestos wastes. The publication does refer to the school asbestos program and presumably was sent out to schools with the AHERA rules when they were promulgated in 1987.

* Guidance for Controlling Asbestos-Containing Materials in Buildings (The **Purple Book**), issued by OTS in **June, 1985** is described in the text as a revision of the Blue Book.

and a "Note to School District" says it may be retained in school administrative offices in lieu of the Orange Book. The Purple Book is also cited in AHERA as the current official guidance which will remain in effect until subsequent guidance materials are available. It places special emphasis on concerns about school children. In an introductory summary, the Purple Book is described as being substantially revised to incorporate new information and experience related to determining if asbestos is present, planning a control program, and choosing further actions if needed.

* Asbestos in Buildings--Guidance for Service and Maintenance Personnel, issued by OTS in **July, 1985**, is a short pamphlet telling workers how to work safely in buildings that contain asbestos. Heavily illustrated, it is filled with do's and don'ts and is used in joint EPA/National Association of School Administrators and other training programs.

* "Asbestos in Schools" A Guide to New Federal Requirements for Local Education Agencies, mailed to schools in **February,1988**, and used in training programs.

* 100 Commonly Asked Questions About the New AHERA Asbestos-in-Schools Rule, mailed to schools in May, 1988.

* The ABC's of Asbestos in Schools, issued by OPTS in **June, 1989**, was developed by the EPA in cooperation with the National Parent-Teachers Association and the National Education Association to "help teachers and parents answer questions and learn the facts about asbestos in schools." Unlike the Purple Book or other technical guidance documents, this is a general information publication that details what school officials have to do to protect children and employees from possible asbestos exposure.

* Managing Asbestos in Place, A Building Owner's Guide to Operations and Maintenance Programs for Asbestos-Containing Materials (**The Green Book**) was issued by OTS in **July 1990**, well after publication of the AHERA rules and regulations to provide additional information on O and M. Even though the foreword says it "does not supplant the 1985 Purple Book as EPA's principal guidance document," but, "based on our experience since 1985 it expands and refines the Purple Book's guidance for a special operations and maintenance (O&M) program." Although it was sent to schools with a covering letter calling it the most comprehensive guidance document since the Purple Book in 1985, it has minimal mention of schools.

* A Building Occupant's Guide to Asbestos, **(draft version)** of a forthcoming OTS publication. It is written in a reassuring way as it offers various options for dealing with potential exposure to asbestos in residential or commercial buildings.

* Environmental Hazards in Your School, published jointly by seven EPA program offices in **October, 1990**, is a "resource handbook" covering the problems of asbestos, radon, and lead in drinking water as they apply to schools, and listing informational resources for the three subjects. The National Education Association, National Parent-Teachers Association, Council for American Private Education, National Association of Independent Schools, and the U.S. Catholic Conference participated in development of the booklet.

* An Advisory to the Public on Asbestos in Buildings, prepared by OTS and signed by the Administrator, and mailed to all schools on March 6, 1991. This document interprets the Five Facts in terms aimed at the concerns of school administrators, employees, and parents and community groups involved with school-related asbestos issues.

C. Other EPA Publications and Materials

* Environmental Progress and Challenges: An EPA Perspective (**June, 1984**), Environmental Progress and Challenges: An EPA Perspective (**August, 1988**), and Meeting The Environmental Challenge: EPA's Review of Progress and New Directions in Environmental Protection (**December, 1990**), general publications summarizing EPA's programs, their accomplishments, and futures.

* The EPA Journal, the Agency's official magazine, in which articles reflect Agency/environmental concerns and Agency activities. Over the years the Journal has published a number of articles and news items about asbestos and asbestos regulation enforcement.

* Asbestos Fact Book, released by the Office of Public Affairs (OPA) in **August, 1985 and June, 1986,** is a comprehensive document about all aspects of EPA's asbestos programs and is still available for distribution to the media and inquirers.

* Environmental Backgrounder on Asbestos, released by OPA in **November, 1988, and revised in March, 1989,** is used as a background handout for the news media and other inquirers by the EPA Press Office.

* The Asbestos Informer **(DRAFT), dated December, 1990.** This OAQPS Stationary Source Compliance Division publication deals primarily with NESHAP-associated subjects, but does review the problem of asbestos in schools.

* EPA Testimony on Asbestos Before The Congress. The content analysis reviewed Congressional testimony about asbestos legislation by EPA officials from the early 1970s through 1990.

* EPA Press Releases dealing with asbestos matters over the past decade were reviewed to determine what messages about the health threat posed by asbestos and asbestos abatement methods were being communicated by EPA to and through the news media.

D. Educational/School Publications

The content analysis looked at a large number of education organization and professional publications. These included the American School Board Journal and special reports published by the National School Board Association; American Schools and University Magazine, which between 1980 and the end of 1990 published at least twenty articles on school-related asbestos issues; the Council of Educational Facility Planners Journal, which in 1983 published, "Asbestos: A Present Hazard to Education"; PTA Today, which published "Asbestos in Your Child's School--How to Get Ride of It"; AGB Reports, a publication of the Association of Governing Boards of Universities, which published "Asbestos Imperative: What You Must Do", in 1986; School Business Affairs, which in late 1986 had an article on the removal of asbestos from Houston's schools; published an article in 1986 or 87 on "Self Insuring Against Asbestos removal; in December, 1988, published a series of articles about AHERA requirements; Education Law Reporter, in March, 1990, published a long article, "Contracting for Asbestos Abatement: What You Need to Know"; and, the National Association of Elementary School Principals newsletter, The Communicator, in November, 1990, wrote about the Green Book under the title, "Guide warns against hasty asbestos removal." The article also questioned the timeliness of the publication.

E. General Publications and News Media

The content analysis included a number of newspaper and magazine articles that were available at EPA headquarters or through the EPA library. While these included major magazines, business magazines, and major newspapers (like the Readers Digest, Time, The New York Times, Business Week, etc.) access to newspapers published across the nation was limited and EPA did not have a clippings archive. Some anecdotal indication of the extent of newspaper coverage comes from articles in school publications, the galley proofs of the Michael Bennett book, The Asbestos Racket, various magazine articles, and some of the PED survey interviews. OTS provided a collection of 1988 newspaper clippings from 43 states.

III. CONTENT ANALYSIS

A INTRODUCTION

This content analysis is organized broadly around two major issues: how the risk of asbestos has been presented and the question of which abatement options are appropriate, with emphasis on the removal option as opposed to various forms of management in place. The discussion of each of these issues is divided into sections covering Acts of Congress and EPA materials, and what others said. Each of these discussions is further divided into three time frames: (1) Pre-AHERA (1972-1986) (2) Post-AHERA enactment and the early phases of AHERA implementation (1986-1988), and (3) the period beginning with the 1988 EPA Report to the Congress (1988 to present.)

B How the risk of asbestos has been presented

1. Acts of Congress and EPA Materials

Several major points emerge from an examination of Acts of Congress and EPA materials:

* All EPA voices--the Office of Toxic Substances (OTS), the Office of Air Quality Planning and Standards (OAQPS), Office of Communications and Public Affairs (OCPA), the Office of Solid Waste (OSW), the Executive offices, and the Office of Policy, Planning and Evaluation (OPPE)--have consistently pictured asbestos as a carcinogen and potentially hazardous to those exposed to asbestos fibers. Only very recently has the concept of this risk being "negligible" entered EPA's asbestos communication lexicon.

* At key points in time, however, the messages about the risks of asbestos that LEA's could get from various EPA sources were somewhat different. This was due to different legislative mandates, changing scientific estimates of risk not being consistently reflected, and simple lack of coordination.

* Messages from individual EPA offices (e.g., OTS) were reflected with reasonable consistency in such channels as the Federal Register, EPA publications, speeches, testimony, and news releases.

a The Pre-AHERA Period (1972-1986)

1. Laws and Regulations:

Early OSHA worker protection standards were issued in June, 1972, with EPA air emissions standards for asbestos, under the Clean Air Act, in the form of a NESHAP published in April 1973 (these were revised in 1975, 1978, and 1990). Each regulation was accompanied by statements tracing the history of asbestos and the health issues involved. In March, 1979, EPA institutionalized official concern about exposure of school children to asbestos by initiating a regionally based technical assistance program to help building owners--and, particularly, school systems--to control asbestos-containing materials in their facilities.

Initially, key Acts of Congress and related rules developed by EPA described the asbestos danger:

October 14, 1975: NESHAP, (CFR Title 40, Part 61, Subparts A and B):

> "Warning signs shall be displayed (that say)...Breathing Asbestos is Hazardous to Your Health." (Reprinted in Orange Book, p.42)

May 27, 1982 Friable Asbestos-Containing Materials in Schools, Identification and Notification (40 CFR Part 763):

> "Asbestos is a known human carcinogen. Extensive epidemiological evidence demonstrates that inhalation of asbestos can lead to pleural and peritoneal mesothelioma, lung cancer, asbestosis,, and other diseases which are serious, irreversible, and often fatal. Asbestos has been responsible for the premature deaths of many persons who worked with types of insulating materials now found in some schools." (Federal Register, May 27, 1982, P. 23361, A. Background).

This information on the asbestos hazard was expanded upon in the 1984 Title V--Asbestos School Hazard Abatement Act, (Public Law 98-377, August 11, 1984) Findings and Purposes, Section 502 (a) Findings and Purposes, which again identifies asbestos as a source of "severe or fatal diseases" and then says:

> "Medical evidence has suggested that children may be particularly vulnerable...substantial amounts of asbestos...have been used in school buildings... Asbestos concentration far exceeding normal ambient air levels have been found in school buildings containing...damaged materials.... The presence in school buildings of friable or easily damaged asbestos creates an unwarranted hazard to the health of school children and school employees."

ASHAA Section 502 (a) also includes a significant finding: "medical science has not established any minimum level of exposure to asbestos fibers which is considered to be safe." This statement, and the one about asbestos concentrations in schools exceeding levels in outdoor ambient air are repeated in a number of EPA guidance documents which preceded the 1988 Report to Congress.

2. Guidance Documents

The first EPA asbestos guidance document, Asbestos-Containing Materials in School Buildings (The Orange Book, Parts 1 and 2), was issued in March 1979. Copies were required to be kept available in school administrative offices. In a "Dear School Official" opening, The Orange Book set the official tone for Federal concern about asbestos in schools:

"...Individuals who are exposed to asbestos could develop lung cancer or cancers in other parts of the body... Since these materials are found in school buildings, we at EPA are particularly concerned with exposure of school children... The enclosed manuals were prepared to...outline the steps you and the schools in your district can take to...protect students and school personnel from exposure."

The Orange Book's first chapter contains a number of risk-related statements which are cited here, at some length, because they serve as a baseline against which to compare future guidance information (Chapter 1, P.1):

"Some asbestos levels measured in school buildings have even been shown to briefly exceed the current Federal workplace exposure level standards..."

"EPA and the scientific community believe that any exposure to asbestos involves some health risk. No safe level of exposure (threshold exposure level) has been established. Further, it is impossible at this time to estimate the degree of risk associated with low level exposure."

"Where possible all exposure to asbestos should be eliminated or controlled."

"The exposure of children and adolescents to asbestos in the school building occurs early in their life span. Their remaining life expectancy provides a long development period for asbestos-related diseases.

"A large number of students can be exposed at one time to asbestos that is released from asbestos-containing materials present in the school building. The duration of the exposure is of concern since school children attend school daily for most of the year."

"The school population is very active. Certain asbestos-containing materials can be damaged during school activities and as a result of the capricious behavior of students... Many cases of badly damaged asbestos-containing materials have been found in schools."

And in Part 2:

"Asbestos fibers, even in low concentration, may have carcinogenic potential, and a biologic activity that may persist for the lifetime of the exposed host." (P. I-1-1)

"Environmental contamination from asbestos containing surfaces occurs not only during construction and demolition, but also throughout the entire life of the structure." (P. I-1-4)

"For buildings with deteriorating asbestos material, however, quiet activity contamination levels may be significantly higher than outdoor ambient air levels." (P. I-2-8)

The Orange Book Part 2 (which is cited in at least one school publication as advocating removal) also sets the stage for its sections on response actions with such statements as:

"Environmental contamination from asbestos can occur not only during construction and demolition, but also throughout the life of the structure (P.I-4); "The rate of fiber dispersal in fallout is continuous, low level, and long lived. Fallout may occur without

physical disruption of the fiber-bearing materials and may simply be a function of degradation of the adhesive (P I-2-5)... "Routine activities in a structure containing sprayed asbestos surfaces will usually result in elevated fiber levels" (P I-2-8)... "Maintenance work...may also result in exposures that exceed regulatory limits established by OSHA."

(Note: According to OTS, the statements about asbestos fallout quote above are not supported by scientific evidence and should possibly be viewed as examples of early over-statement of the asbestos-in-buildings danger.)

The next page deals with asbestos-related diseases at considerable length.

Guidance for Controlling Friable Asbestos-Containing Materials in Buildings (The Blue Book), published in March 1983, reiterates statements about exposure to airborne asbestos regardless of level is a health risk, that children and young adults are most at risk, and adds:

"Prevalent levels of airborne asbestos inside buildings where asbestos-containing materials are present may exceed outdoor levels by a factor of 100.(p. viii) As to low level exposure, it adds, "the risk of cancer is of greater concern at low levels than the risk of asbestosis," (P. 1-1) and, "..asbestos workplace studies suggest that a child exposed from age 5 to 10 has at least 10 times the chance of developing mesothelioma as does an adult exposed to the same amount of asbestos between ages 35 and 40." (P.1-1)

The Blue Book has pictures of damaged gym ceilings and a hole made by the top of a flagpole standard. (P. 3-9,3-10)

Two years later, in 1985, three different guidance publications reiterated the asbestos exposure health risk threat. Asbestos Waste Management Guidance--Generation, Transport, Disposal, issued in May by OSW, not OTS, and aimed primarily at those involved in disposing of asbestos wastes, devotes almost three pages to asbestos-related health hazards. It opens with the familiar statement of EPA concern about asbestos dating back to the early 1970s, and that the concern is based on medical evidence. Asbestos in Buildings--Guidance for Service and Maintenance Personnel, issued in July, also emphasizes health risks.

The most significant of the three 1985 publications is Guidance for Controlling Asbestos-Containing Materials in Buildings (The Purple Book). This publication, which is described in a note to school districts on page ii as being retained instead of the Orange Book to satisfy the requirements of the TSCA Asbestos-In-Schools rules.

The Purple Book represents the beginning of OTS' attempt to put asbestos risks in a more balanced perspective. Its wording for the first time, softens the degree of risk:

"The presence of asbestos in a building does not mean that health of building occupants is necessarily endangered. As long as asbestos containing material (ACM) remains in good condition and is not disturbed, exposure is unlikely. (Note: This assertion conflicts with the earlier statement about fiber fallout which appeared in the Orange Book and is considered questionable.) When building maintenance, repair, renovation or other activities disturb ACM, if it is damaged, asbestos fibers are released, creating a potential hazard... Although not required to do so by federal law, the prudent building owner will take steps to limit building occupants' exposure to

airborne asbestos." (P.S-1)

Of schools, the Purple Book says:

> "Prevalent concentrations of airborne asbestos in a sample of school buildings was 10 to 100 times higher than outdoors. At the same time, asbestos levels in the schools were 10,000 to 100,000 times lower than pre-1972 levels in asbestos insulation workplaces."(P. 1-2), and "also, asbestos exposure in children is of special concern since they have a greater remaining lifespan than adults, their lifetime risk of develop mesothelioma is greater. Avoiding unnecessary exposure to asbestos is prudent."(P. 1-2)

3. Other EPA Publications

Other EPA publications, not specifically related to ASHAA, AHERA or the NESHAP, also pictured asbestos as a health hazard over this same time period. For example, the EPA Journal, which to a large measure mirrors the Agency's programs and major concerns, published a number of articles on asbestos and asbestos regulatory programs, asbestos in the home, asbestos enforcement, asbestos-related training. As early as December, 1983, in an EPA Journal article entitled "Dealing with Toxics: Present and Future," then-Deputy Administrator Al Alm wrote:

> "We are evaluating our current asbestos control program to see how effective it has been in reducing public health risk, and are conducting a survey of asbestos in public buildings to assess the level of health danger that represents. We will be evaluating more extensive regulation of this dangerous substance."

In this one paragraph, Alm used the words health, risk, danger, and dangerous.

The first major EPA Journal article on asbestos appeared in May, 1984, under the title, "Twenty Lessons from Asbestos.: A Bitter Harvest of Scientific Information." It was written by Dr. Irving Selikoff, a leader in the asbestos-related medical field. He wrote in terms of 10,000 deaths so far, and over 100,000 more to come. Dealing with EPA's asbestos-in-schools efforts, he wrote:

> Lack of "concern about very low levels seems somewhat out of touch with reality while some schools have levels of 100 to 1000 nanongrams and while maintenance and repair work on asbestos materials is often undertaken without precautions or supervision."

That same issue of the EPA Journal, coincidentally, had a short news item in its "Update" section about penalties assessed against the Diocese of Pittsburgh and the Southeastern City Schools in Grove City, Ohio, for violating EPA's then existing school asbestos rule. The story also mentioned complaints against schools in New Hampshire, Philadelphia, PA, Cheyenne, WY, and Lebanon, OH. Succeeding issues had additional stories about EPA enforcement against schools around the country. Over the years, other stories on asbestos also included information about the substance being dangerous and a carcinogen. Such information also appeared in all EPA news releases about asbestos matters.

In the June, 1984 Environmental Progress and Challenges: An EPA Perspective, the Air section; includes asbestos health effects on a chart (P. 12, Figure A , and in the Toxics section (Pp. 110-113) after describing the health effects at length says "asbestos is known to be a health threat to millions of people," among them school children, teachers and

others in schools, and notes that "of particular concern is the exposure of children to asbestos." The section also describes what EPA was then doing to "safeguard" children.

b. Post-AHERA (1986-1987)

1. Legislation and Regulations

On October 22, 1986, the Asbestos Hazard Emergency Response Act (Public Law 99-519) continued the emphasis on potential dangers, starting with the words "Emergency Response" in its title, and with such statements as:

> "The danger of exposure to asbestos continues to exist in schools and some exposure actually may have increased due to the lack of Federal standards and improper response action." (Section 201:(a)(1))

The EPA's comparable statement, in the October 30, 1987 Asbestos-Containing Materials in School Final Rule and Notice (AHERA rules) (Federal Register, October 30, 1987) under Supplementary Information, D., Basis for Decision,(page 41829) is more subdued:

> "EPA's analysis of risk placed in the rule-making record when the proposed rule was issued shows that asbestos in schools could present a risk or concern and that the measures required by this rule are necessary to protect public health and the environment."

2. Guidance Documents

The one major guidance document issued during this time period, Asbestos in Schools--A Guide to New Federal Requirements for Local Education Agencies, did not discuss the dangers of asbestos exposure except within the specific context of abatement response actions. Its emphasis is explaining the AHERA regulations. Another publication, 100 Commonly Asked Questions About the New AHERA Asbestos-in-Schools Rule, did not include questions about the dangers of asbestos exposure or the question of whether asbestos should be removed or otherwise managed.

3. Other EPA Materials

During this period, no additional documents were issued other than fact sheets to go with the rules, but EPA Journal articles and Agency news releases continued to refer to asbestos as health-threatening and a carcinogen.

c. Since the Report to Congress (1988 to Present)

1. Legislation and Regulations

The following year, the February, 1988 EPA Report to Congress, EPA Study of Asbestos-Containing Materials in Public Buildings set the stage for future differences between early and later EPA appraisals of the risk involved, and the more direct advocacy of asbestos management in place instead of removal. While reiterating the health hazards presented by asbestos exposure and expanding upon the danger to school children posed by asbestos, the report also deals with other studies, including one made in 1987 (Hatfield, Stockrahm, Chesson, 1987, for OTS)(Appendix 2, P. 2-1) that found the indoor air asbestos levels in 43 federal buildings in six states were the comparable to levels in the

ambient air outside. This indication that the problems in buildings other than schools might not be as dangerous notwithstanding, the report says, service workers "appear to be equally at risk, whether employed in public or commercial buildings or in schools." (P.7)

In dealing with the schools versus public buildings exposure issue, the report says:

"The potential for damage or disturbance in schools might be greater than in many other buildings, given the nature of the occupants (children) and higher expected level of activity. (P. 7)... It is difficult to make comparisons between schools and nonschool buildings with regard to exposure and risk (P.7)... A proportional risk model developed by the Agency suggests that elimination of asbestos exposures in schools might significantly reduce risk for populations later exposed in public and commercial buildings." (P.7)

The report includes a letter from then EPA Administrator Lee M. Thomas transmitting the report to the President of the Senate and the Speaker of the House, which concludes. (P. 5 of letter):

"...Asbestos in commercial buildings, like asbestos in schools, represents a potential health hazard that deserves careful attention. However, we need to continue to place our primary focus on asbestos in schools... Children, since they have the longest life expectancy, would appear to incur the greatest risk... Children also spend a great deal of time in school where any asbestos is especially susceptible to disturbance by the occupants..."

Two other EPA rules round out the risk picture presented in laws and regulations: The first was issued by OAQPS (not OTS). The second was issued by OTS.

In January, 1989, the **Asbestos NESHAPS Revision, Including Disposal of Asbestos Containing Materials Removed from Schools; Notice of Proposed Rule Revision..48 CFR Parts 61 and 763** (Federal Register, January 10, 1989 P.912)) says:

"The existing standard and proposed amendments...are based on the Administrator's determination that asbestos presents a significant risk to human health as a result of air emissions...and is therefore a hazardous air pollutant."

And, in July, the **Asbestos: Manufacture, Importation, Processing, and Distribution in Commerce Prohibitions; Final Rule (40 CFR Part 763** (Federal Register, July 12, 1989):

"EPA is issuing this rule to reduce the unreasonable risks presented to human health by exposure to asbestos during activities involving these products." (P.29460)

The phrase, "unreasonable risk" appears a number of times. Considering the wide publicity given this "ban" on asbestos, this rule no doubt reinforced school officials' and community concerns about asbestos in their schools, even though it was published after AHERA-required inspections and management plans were completed and the rule really did not affect them.

2. Guidance Documents

The ABC's of Asbestos in Schools, published in June 1989, begins with, "asbestos fibers can cause serious health problems," and reiterates EPA's concern for children, but, like

some of its predecessors, links asbestos exposure to exposure to cigarette smoke and repeats, "much uncertainty surrounds the risk from exposure to low levels of asbestos fibers." (P.2)

A key element of EPA's communications about asbestos in the most recent time period is the repetition of the "Five Facts," a summary of EPA's recent concept of the asbestos-in-buildings exposure risk, and the Agency's emerging emphasis on management-in place as apposed to removal. The "Five Facts" were first used by Office of Pesticides and Toxic Substances' Assistant Administrator Linda Fisher in replying to the Science Magazine article (see below), while testifying before the House Subcommittee on Health and Safety Materials of the Committee on Education and Labor on April 3, 1990. She did not dwell on specific health concerns, using instead a statement used repeatedly over the years in testimony by EPA officials:

> "Our goals, and those of this subcommittee, remain identical: to minimize the inhalation of asbestos which is in place in school buildings."

As to the degree of risk, she said, (page 10):

> "With respect to the so-called 'one fiber can kill' image, the present scientific evidence will not allow us to state unequivocally that there is a level of exposure below which there is a zero risk, but the risk in fact could be negligible or even zero... While scientists have been unable to agree on a level of asbestos exposure at which we, as public policy makers, can confidentially say, 'there is no risk,' this does not mean that all or any exposure is inherently dangerous. To the contrary, almost every day we are exposed to some prevailing level of asbestos fibers in buildings or experience some ambient level in the outdoor air. And, based upon available data, very few among us, given existing controls, have contracted or will ever contract an asbestos-related disease at these low prevailing levels....present evidence suggests that building occupants face only very slight risk. Severe health problems attributed to asbestos exposure have generally been experienced by workers in industries...where they were constantly exposed to very high fiber levels in the air..."

In guidance materials, the Five Facts surfaced in a truncated version in the Foreword to the Green Book, Managing Asbestos in Place, A Building Owner's Guide to Operations and Maintenance Problems for Asbestos-Containing Materials, published in July, 1990. This guidance document continued the qualification of asbestos exposure risk that began with the Purple Book:

> "Fact One: Although asbestos is hazardous, the risk of asbestos-related diseases depends upon exposure to airborne asbestos fibers...at very low exposure levels, the risk may be negligible or zero... Fact Two: Based upon the available data, the average airborne levels in buildings seem to be very low. Accordingly, the health risk to most building occupants also appears to be very low. (Green Book, pp vii, viii)."

The Foreword which contains the Five Facts does not discuss potential health effects, although they are discussed in a subsequent background section on Page 2. The Green Book says virtually nothing about schools (except for a brief paragraph on AHERA) and a slightly longer section on AHERA-required inspections. It says, among other things:

> "Whenever we discuss the risk posed by asbestos we must keep in mind that asbestos fibers can be found nearly everywhere in our environment (usually at very low levels. There is, at this time, insufficient information concerning health effects resulting from

low-level asbestos exposure, either from exposures in buildings or from our environment. This makes it difficult to accurately assess the magnitude of cancer risk for building occupants, tenants, and building maintenance and custodial workers. Although in general the risk likely to be negligible for occupants, health concerns remain, particularly for the building's custodial and maintenance workers." (P.2)

Although the Green Book was not written for schools per se, it was sent to 44,000 LEAs with a covering letter calling it "the most comprehensive asbestos guide published by the U.S. Environmental Protection Agency (EPA) since 1985." This claim notwithstanding, it does not include any references to previously published information about school children being especially vulnerable, asbestos levels in schools being higher than the ambient air outside, or other information about the propensity of in-school activities for damaging asbestos that appeared in earlier guidance or, in part, in the ABCs and the Purple Book (still the guidance of record, to which the Green Book is a supplement).

While the Five Facts continued to be used in other testimony and letters to the editor or other articles in which EPA refuted attacks on the Agency's asbestos policy stemming from or based on the Science article or comparable sources, the only other EPA guidance document in which they appear is the March 6, 1991 memorandum from Administrator Reilly, An Advisory to the Public on Asbestos in Buildings, which is reviewed in the section of this document dealing with the period after the 1988 EPA Report to Congress.

Another major publication is Environmental Hazards in Your School, published in October, 1990, and dealing with asbestos, radon, and lead in drinking water. On page 2, it says, "EPA estimates that there are asbestos-containing materials in most of the nation's approximately 107,000 primary and secondary schools." (Note: other EPA publications use figures ranging from 31,000 to 40,000-plus, and on page 4, this same publication puts the number at 44,900.) The problem with the figures may be that different figures may represent LEAs or individual schools, or schools with friable or nonfriable asbestos.

On page 3, the publication says:

"Asbestos fibers can cause serious health problems...uncertainty continues to surround the probability of malignancies occurring at low levels of exposure. Low level exposure would include average exposure to asbestos fibers in schools and buildings. Due to lack of reliable exposure data extracted from epidemiological studies and the absence of an exposure threshold, the fact that school children and custodial workers are exposed to any amount of asbestos fibers continues to constitute a concern."

3. Other EPA Publications

In August, 1988, Environmental Progress and Challenges: EPA's Update, there is a statement about issuing emissions standards for asbestos and health effects (p. 13), a paragraph under Indoor Air Pollution (P.32) expressing concern about asbestos in the home, listing of ASHAA and AHERA under major toxic chemical laws administered by EPA (P. 113), an article on asbestos control training programs (p.122) and additional material on Agency efforts to achieve further reductions of asbestos risks (Pp. 124, 125). Asbestos in schools is not mentioned and there is no special section on the nature of the asbestos health risk.

In December, 1990, Meeting the Environmental Challenge: EPA's Review of Progress

and New Directions in Environmental Protection, the health effects of asbestos are included on the list of regulated air pollutants (P.10), and asbestos is included in a list of indoor air pollutants (P. 11) but further mention of asbestos (P. 18) is limited to:

> "..In 1989, EPA banned the manufacture of most asbestos products. EPA has also provided considerable grants and guidance to protect children from exposure to asbestos in schools."

Hazardous Substances in Our Environment: A Citizen's Guide to Understanding Health Risks and Reducing Exposure, a September, 1990, publication, cited asbestos as a carcinogen (P. 23), although it used a cement factory as its exposure example and did not mention schools.

One additional publication should be noted. The Asbestos Informer entitled, "Asbestos--What You Don't Know Can Hurt You!" A draft version dated December, 1990 but scheduled for mid-1991 release, is related primarily to NESHAP-Asbestos and is being published by the Office of Air Quality Planning and Standards, Stationary Source Compliance Division. The emphasis is on occupational, para-occupational (families of workers), and neighborhood exposure, although it does discuss in-school exposure and will include a brief summary of the Five Facts. The content about asbestos exposure risk, is, however, less reassuring than the Green Book or the 1991 Public Advisory:

> "Once inhaled, asbestos fibers can easily penetrate body tissues. They may be deposited and retained in the airways and lung tissue. Because asbestos fibers remain in the body, each exposure increases the likelihood of developing an asbestos-related disease... Scientists have not been able to develop a "safe" or threshold level for exposure to airborne asbestos... The younger people are when they inhale asbestos, the more likely they are to develop mesothelioma. That is why enormous efforts are being made to prevent school children from being exposed."

EPA news releases related to asbestos continued to refer to it as a dangerous carcinogen, etc. For example, a news release dated August 22, 1989, about EPA enforcement actions quoted Deputy Administrator Habicht as saying: "Asbestos is a known cause of cancer in humans and it can be a killer." The release also estimated that as much as "half of the asbestos demolitions and renovations done nationwide may not be in accordance with Clean Air Act regulations." (Note: This is considerably different from the March 6, 1991, Five Facts statement that "we believe most asbestos removals are being conducted properly." While the latter statement no doubt refers to asbestos-in-schools removals, the reader is left to make that distinction unaided.) A July 6, 1989 news release on the asbestos phaseout rule said asbestos has been linked "to a number of fatal diseases."

d. Observations on the treatment of risk in Acts of Congress and EPA materials

It is evident from the foregoing that the various EPA voices have been generally consistent in describing the potential dangers to human health presented by asbestos exposure, but since the initial AHERA implementation period there has been a softening of some messages about the risks involved in exposure to asbestos in schools and buildings. The degree of hazard that in early publications is attributed to medical sources becomes, for example, a hazard which medical sources can't determine, and the notion of no known threshold of exposure becomes a matter of 'we don't know how dangerous low level exposure is.'

Why this change in emphasis occurred is not explained in the EPA publications going to school officials and the general public. Instead, phrases like "based on five years of experience," or "our eleven years of experience," introduce the changes. If it is based on the surveys in the 1988 Report to Congress, that is not explained in the documents that were reviewed, although Assistant Administrator Fisher did discuss the reasoning behind the Five Facts at much more length than they have been dealt with elsewhere. If messages are evolving, straight talk on the reasons behind the changes need to be better explained to audiences.

2. What Others Said

How did the various EPA messages "Play in Peoria," or, better yet, in the offices of the Peoria school district? This content analysis cannot fully answer this question It can only report what was written in different publications at different periods by those who undertook to decipher EPA's messages for their various audiences, how they perceived the response of school officials and the community, and what they advised their readers to do by way of response. What the review did find was:

* While there may have been reasonable consistency in how the EPA messages were reflected in official publications and EPA statements, this was not necessarily so in the trade and general news media. Sources outside EPA have given a variety of different messages to Local Education Agencies (LEAs) about the risk of asbestos.

* Those sources include school associations, consultants, contractors, school employees, and parents. LEAs have also received messages from OSHA, the courts, the scientific community, and the press.

* Some of these sources have supported EPA's messages, others have challenged them, and still others have misrepresented them and/or pointed out the inconsistency of messages from various sources. As time goes on, the controversy has increased, especially since the Science article and Administrator Reilly's speech on asbestos policy in June 1990.

In reviewing educational publications, the news media, and other non-EPA publications, it is often difficult to separate risk-related content from abatement- and response-related material. This is especially so with the educational organization publications, since their major emphasis, by and large, was what to do about asbestos, not how dangerous it is. A broader review of these publications will be found at the end of Section 2, which deals with the question of removal vs. management-in-place. The general media are reviewed at length in Section 4.

a. Educational Publications

First, a look at school-related publications which are widely read by LEA administrators and which reflect the context within which school administrators view asbestos and other operational problems. It is worth noting that many of the articles are surrounded by a "Greek chorus" of ads for asbestos consultants, removal contractors and similar firms.

In educational publications in particular, the EPA messages are most often translated by lawyers, consultants, contractors or others with a vested interest in the translation. Few of the articles came from EPA sources, and only a few were written by school administrators. This is not to say the writers were deliberately distorting their subjects,

but it is obvious that they had a very specific perspective. And, of course, whatever they were writing about the asbestos-in-school hazards was reinforced, or confused, by what appeared in the general news media.

An example of what appeared in the educational press is the May-June 1983 issue of the Council of Educational Facility Planners Journal (P. 18,19) by professors L. Dayle Yeager and David Bilbo, who say, of asbestos products:

> "Many...have been proven to be connected to long term health problems...were used extensively in the construction of educational facilities... Based on the assumption that a safe learning environment exists in their school facilities, Americans have routinely entrusted the physical well-being of their children to the educational system.. This prevailing attitude may undergo drastic changes within the foreseeable future as a result of past and current research linking asbestos to long term health problems."

Citing projections that 17 percent of all cancer deaths in the United States will be asbestos-related, the writers conclude:

> "Passage of time without immediate and decisive action compounds this problem. To ignore this is to violate the trust of all Americans who created or create and support an educational system designed to promote the physical and mental well-being of their children."

The article offers as resources an EPA package and the Orange Book.

Only one issue of PTA Today, the organ of the National Parent-Teachers Association, was found that had a story on asbestos. Appearing in February 1985 (before AHERA), the article was entitled "Asbestos in Your Child's School: How to Get Rid of It (P. 18,19) and written by a firm of mental health consultants. Done in Question and Answer format, it deals at length with asbestos dangers, saying:

> "School is the most likely place he or she (a child) would encounter asbestos" and using EPA figures to estimate that some 15 million school children and 1.4 million teachers and school employees may be at risk through exposure.

As time went on, educational publications become increasingly focussed on abatement methods and requirements, costs and funding questions, and legal matters rather than the risks involved.

Rarely are any school sources quoted as questioning EPA's risk messages. One is cited in the Section 2 review of educational publications. The review of the general news media reporting on asbestos removal issues in 1988 found two such statements in 464 newspaper articles. One has to assume, therefore, that school officials accepted EPA's risk messages as reasonable.

b. General Press

Insofar as the general press is concerned, there were many messages about the risks associated with asbestos, most of them tending to support and dramatize EPA's statements over the years. It was not until articles in the New England Journal of Medicine, (June 29, 1989) and Science,(January 19, 1990) criticized EPA's asbestos policy as being based on over-stated assumptions of the risk involved--that there began to be a spate of articles questioning how dangerous asbestos really is. These appeared in

such publications as Readers Digest, news magazines, the American Spectator, USA Today, the Wall Street Journal, and the New Republic. Others such as the New York Times Magazine, sought to clarify the arguments in feature articles. The "Five Facts" were cited by EPA in various newspapers to clarify the Agency's position.

C. The Question of Removal vs. Management-in-Place

Although the AHERA study and other evidence indicates that LEAs that have removed asbestos in their schools or plan to are in the minority, this review focusses on this area because it has been the subject of considerable controversy in relation to costs, necessity, school closings, inherent danger of doing so, etc. The perception that asbestos removal has been widespread is not supported by the AHERA study (which puts the percentage of AHERA plans that include removal at between 10 and 15 percent), but it was implied in Administrator Reilly's asbestos speech, and educational and other publications give a similar impression, especially about the pre-AHERA years. Unfortunately, no one seems to have kept statistical records on the subject. EPA has been charged both with fostering removal and failing to foster removal. The content review finds:

* A careful reading of EPA documents shows that the Agency has consistently (pre-and post-AHERA) maintained that asbestos-in-schools laws do not necessarily require schools to remove asbestos they find in their buildings even though the asbestos NESHAP rules may require removal when a school is being renovated or demolished; management-in-place may be the preferred option in many cases, a message EPA is now making especially clear.

* Nevertheless, it has been very possible at many points for LEAs to get the impression from the Agency's documents and actions that removal is the preferred option. The Office of Toxic Substances has moved forcefully to correct this impression in recent years, but there have times when the message was not clear. Whether or not this actually led to large numbers of "unnecessary" removals cannot be documented by this content analysis, just as there are no published statistics on NESHAP-related removals.

* The message about maintaining asbestos in place has not been consistently reflected in the Federal Register, EPA publications, and statements by EPA officials, probably because it is a relatively new development.

* Timing of EPA's post-AHERA publications that emphasized maintenance-in-place asbestos abatement may have contributed to confusion about this issue on the part of a significant number of LEAs:

  - Published AHERA requirements and rules, and EPA publications and releases, emphasized (1) using an accredited abatement counselor to develop and LEA's asbestos abatement plan, (2) specific deadlines for various steps in the compliance process, and (3) an options selection framework within which LEAs could develop and implement their required asbestos abatement plans.

  - Publications emphasizing the changed approach were not released until well after the deadlines approached. The one publication that said the abatement counselor's advice could be changed was issued one year after the plan deadline, then based the opportunity for change on inspections still-to- come.

Beginning with the original NESHAP ban on spraying asbestos on open surfaces and requiring removal of asbestos (if the amount found was greater than certain specified

quantities) when demolitions or renovations were undertaken, the EPA has communicated to schools the need to do something about determining and abating their asbestos problems. Early rule-making required inspection and notification but not abatement measures, although they were recommended. But ASHAA did make available grants and loans to financially troubled schools to help pay for abatement (which, since the statute required that funds be directed to schools with the most severe asbestos hazards, generally paid for removal). AHERA established a framework for mandated abatement, offering options which included encapsulation, enclosure, maintenance, repair, and removal. On the other hand, the Agency was also saying that EPA rules don't prohibit removal if that's what an LEA decides to do, and the largest portion of ASHAA funding was, and is, still paying for removals. Since, as early as 1972, EPA began discouraging removal except when truly necessary, one question this analysis seeks to answer is: given that EPA's asbestos-in schools message was multi-faceted, directed to several receivers (schools, parents, accredited personnel), and in recent years had to be adjusted to accommodate scientific developments, was the message clear and consistent or confused and subject to misinterpretation?

The following analysis looks at what EPA said, both as to risk and as to the removal question, and how the message was reflected by others.

1. Acts of Congress and EPA materials

a. The Pre-AHERA Period (1972-1986)

1. Laws and Regulations

NESHAP Air Emission Standards for Hazardous Air Pollutants: Asbestos Regulations, first published by OAQPS in **1973** and amended several times, most recently in **1990**, these regulations require that asbestos be removed before a building is renovated or demolished. This requirement applies to schools as well as other public or commercial buildings. The most recent revisions provide more specific requirements for transporting and disposing of asbestos after it is removed.

Friable Asbestos-Containing Materials in Schools, Identification and Notification, the "Asbestos-in-Schools" Rule, promulgated by OTS in 1982. On the subject of abatement, this document says, in its Introduction(p. 23360):

> "Many of the friable asbestos-containing materials in schools do not require abatement or removal. A reasonable effort by school officials to manage the materials can prevent damage to or deterioration of them and the consequent release of asbestos and exposure of users... Some asbestos-containing materials identified when complying with the rule may be determined to require corrective action such as removal, encapsulation with a sealant, which improves the cohesive strength of the material, or enclosure."

The rule goes on to describe the Orange Book (published in 1979 and quoted elsewhere in this review) as a source of guidance about what to do and how to do it, notes that "abatement is often needed whenever the friable asbestos is visibly damaged and easily accessible or has inherently poor cohesive strength." In "A Guide for Reducing Asbestos Exposure," (reproduced on P. 23373), the only reference to removal is:

> "if you must disturb or remove large sections of asbestos-containing material,...turn off the school's ventilating system if you are disturbing or removing large sections of

asbestos-containing materials."

The Asbestos School Hazard Abatement Act of 1984 (ASHAA) Public Law 98-377, **August 11, 1984**, provides funds for financially needy schools with serious asbestos problems (the kind that necessitate removals) and twice includes in the list of actions (enclosure, encapsulation, removal) for which federal funding could be available:

> "replacing the asbestos material removed from school buildings with other appropriate building materials..."

This may have unintentionally strengthened perceptions that EPA favors removal, although the fact the statutory language and the fact that most ASHAA grants and loans have funded removal projects undoubtedly had a much greater impact.

2. Guidance Documents

Asbestos-Containing Materials in School Buildings, Parts 1 and 2 (The Orange Book), published in **1979**:

> After a section saying there are two basic long-term control measures, containment or complete removal, the Orange Book says: "Asbestos removal provides a final solution by elimination of the contaminant source. It requires, however, renovation involving friable asbestos materials, with significant problems of worker protection, prevention of environmental contamination, and considerable interruption of activities in the building. Containment by sealing, encapsulation, or barrier system usually results in lower levels of asbestos contamination during alterations, takes less time, and may be less expensive, especially if replacement is avoided. The asbestos source remains, however, and damage, deterioration, or failure of the protective system will result in recurrence of asbestos contamination.
>
> ...Maintaining low fiber levels may require strictly controlled maintenance custodial activities for the life of the building (P-II-2-4).
>
> Under enclosure systems the Orange Book says:
>
> "The uncertainties of its long term effectiveness, the need for continued air monitoring, and the remaining problem as the time of demolition or renovation, make this method unattractive." (P. II-3-1).

A long section on removal discusses how to go about it properly but does not point to it as potentially dangerous.

Guidance for Controlling Friable Asbestos-Containing Materials in Buildings (The Blue Book), issued in **March, 1983**:

> The Blue Book also puts removal at the top of a list of abatement measures (P. 311) and says (P. 3-14):
>
> > "Many abatement experts believe removal of asbestos-containing material is the only final and satisfactory solution to the problem of asbestos exposure. Competently performed, with adequate protection for workers and building occupants, removal can eliminate all potential for exposure. On the other hand, removal may be more complicated and cost more initially (although not

necessary in the long run) than other abatement measures."

Subsequent sections point up the difficulties involved in other measures, and a table (P. 3-27) comparing asbestos control measures, positions removal first in the table's listing, and cites as advantages: "Eliminates asbestos source. Eliminates need for special operations and maintenance program." According to the table, removal is always appropriate, never inappropriate.

Guidance for Controlling Asbestos-Containing Materials in Buildings (The Purple Book), issued in **June, 1985**; places operations and maintenance (management-in-place) at the top of the list of abatement options, thus beginning the shift in EPA emphasis. But in a table (P.4-9), similar to that in the Blue Book, removal is listed first in relation to surfacing material, saying it "eliminates asbestos source," and "eliminates need for special operations and maintenance program. The table indicates removal "can be used in most situations." No inappropriate applications are listed, and the disadvantages listed for enclosure and encapsulation include the fact that the source remains and must be removed later.

In a section on methods (P. 4-10), the Purple Book says:

> "Removal has the widest applicability. It is also the only truly permanent solution, since no building containing asbestos can be demolished without first removing the ACM."
>
> "If ACM has only minor, isolated damage, removal of selected areas may be sufficient."

It goes on to say:

> "Enclosure and encapsulation have limited application. Enclosure is restricted to situations where ACM can be isolated in small localized areas. Encapsulation can be used only for acoustical plaster in good condition. In addition, the special operations and maintenance program must be continued...until the building is demolished. Encapsulation may make eventual removal more difficult and costly."

3. Other EPA Publications

During this period, new EPA publications other than those previously mentioned, did not deal with asbestos removal as an issue, nor did EPA news releases.

b. AHERA and Immediately After (1986-1988)

1. Laws and Regulations

The Asbestos Hazard Emergency Response Act of 1986 (AHERA) (Public Law 99-519), **October 11, 1986**, contains this early statement about the Purple Book (Section 201(a)(3):

> "The guidance provided by the Environmental Protection Agency in its 'Guidance for Controlling Asbestos-Containing Material in Buildings' (The Purple Book) is insufficient in detail to ensure adequate responses. Such guidance is intended to be used only until the regulations required by this title become effective."

AHERA (section 203) establishes four degrees of damage or potential damage to

asbestos, and requires EPA to establish appropriate response actions for each category, again referring back to the Purple book as a resource, and says, in Section 204, that until new regulations are promulgated, the "current guidance"--the Purple Book--is in effect (What it says about danger and removal is reviewed below.) AHERA establishes a system requiring LEAs to hire accredited advisors to help them develop plans, then to submit the plans for review by their State Governor, who has a stated period during which he can disapprove it. In Section 205, one reason for which a Governor may disapprove a plan is that it:

> "Does not contain a response action schedule which is reasonable and timely, taking into account circumstances relevant to the speed at which the friable asbestos-containing material in the school buildings...should be responded to...including human exposure to the asbestos while the friable asbestos-containing material remains in the school buildings."

The AHERA rule (P. 41826 ff.) also describes the Purple Book as:

> "State-of-the art guidance to help identify and control asbestos in buildings... The document provides criteria for building owners to use in deciding which abatement method is most appropriate for each particular situation."

The Purple Book became the guidance document in effect when AHERA was enacted and the AHERA rules promulgated. Under the law, it was to remain in effect until new guidance was promulgated through the rule-making process. So, because new guidance materials were not promulgated by rule-making, the Purple Book was in effect during the AHERA planning and implementation period and is still the official guidance, even though it is not binding in the same sense that the formal AHERA rules are. Subsequently, in mid-1989 and 1990, the Purple Book was supplemented by a publication on asbestos assessment and the Green Book's operations and maintenance guidance. And, the Foreword to the subsequent 1990 guidance document (Managing Asbestos in Place, the Green Book) says that this new guidance:

> "does not supplant the 1985 Purple Book as EPA's principal asbestos guidance document. Rather...it expands and refines the Purple Book's guidance for a special operations and maintenance program..."(P.vii)

Note: A description of previous EPA activities, however, indicates the Agency had, prior to AHERA's enactment, initiated development of two new guidance documents on asbestos control. (It is assumed that these were the ABCs and the Green Book.)

Subsequent sections dealing with the specifics of various abatement measures do not raise any serious questions about dangers or hazards.

A long description of various asbestos problems and preventive measures, concludes with "If, however, such preventive measures cannot be effectively implemented, other response actions, including removal, will be required." (P. 41830) "Nothing in the rule shall be construed to prohibit the removal of ACBM from a school building at any time, should removal be the preferred response of the LEA...", (P. 41832) and, further on, "If it is not feasible...to repair the damaged material, it must be removed." The rule itself (Section 763.90 Response Actions), repeats the statement that nothing in the rule will prevent schools from removing asbestos if they so wish and lists a number of situations in which removal could be the preferable response, qualifying this only by saying, "response actions, including removal...shall be designed and conducted by persons accredited to

design and conduct response actions." (P. 41850)

One other section (763.93, P. 41853) is cited here because is bears on the question of whether or not LEAs could change their plans on the basis of another opinion after they had been approved. Whether they can or can't change them after formal approval has been obtained and the implementation deadlines have passed, is a question that relates to subsections (c) and (d):

> "(c) Each local education agency must begin implementation of its management plan on or before July 9, 1989, and complete implementation in a timely fashion. (d) Each local education agency shall maintain and update its management plan to keep it current with ongoing operations and maintenance, periodic surveillance, inspection, re-inspection, and response action activities. All provisions required to be included in the management plan under this section shall be retained as part of the management plan, as well as any information that has been revised to bring the plan up to date."

Note: It does not say yes; it does not say no, insofar as changes soon after the 1989 implementation date, but this section is used in the covering letter which OTS sent to LEAs with the Green Book to encourage changes on the basis of forthcoming inspections. Hindsight suggests further explanation in the rule would have been helpful. (See below, under Green Book).

Shortly after the AHERA rule was promulgated, EPA released "Asbestos in Schools" A Guide to New Federal Requirements for Local Education Agencies **(early 1988)**. This was used for training and orientation by such groups as the National Association of School Administrators. On the subject of removal, it may have added to the confusion for those LEAs that ultimately chose the removal option:

> Chapter 6 (P. 19) deals with response actions. In its opening paragraph--using language from the statute-- it says:
>
> > "The response action selected must protect human health and the environment, but the LEA may choose to implement the least burdensome response action from those actions that protect human health and the environment...LEAs may always choose to remove ACBM... All response actions, including removal...must be designed and conducted by persons accredited to design and conduct response actions."

"Least burdensome" is not defined, presumably because there are so many local-scene variables. The chapter then goes on to list the five categories of damage or potential damage listed in the AHERA rule. It gives alternative control methods for them. For four of the five categories, removal is one of two or three options. The dangers of removal are not discussed in the publication.

The Agency also published, in May, 1988, 100 Commonly Asked Questions About the New AHERA Asbestos-In-Schools Rule, "to help school officials, training providers, and accredited persons better understand the new AHERA schools rule. Interestingly, it contains no questions about removal as compared to other options.

3. Other EPA Publications

The Asbestos Fact Book was issued in 1985 and reissued in 1986. It reflected comparable information about the laws and requirements that appeared in the Purple

Book. The EPA Journal had an occasional article about asbestos but did not get into the removal issue.

c. Since the Report to Congress (1988 to present)

1. Legislation and Regulations

During this period there have been no new major asbestos laws enacted, and new NESHAP rules did not involve the issue of removal vs. management-in-place. Rather, they focussed on transportation and disposal of asbestos once it had been removed.

The asbestos ban rule, Asbestos: Manufacture, Importation, Processing, and Distribution in Commerce Prohibitions, Final Rule, issued in July, 1989, did not directly involve asbestos in schools, except as it ultimately affects various products used in school building, but the publicity it received may have influenced some LEAs as they considered abatement options.

2. Guidance Documents

The ABC's of Asbestos in Schools (**June, 1989**), is the first EPA publication to emphasize the potential dangers of removal. Whereas the Purple Book and the 1988 AHERA Guide listed a number of circumstances under which removal could be appropriate, the ABCs, (Pages 6-8), says:

> "...Asbestos that is managed properly and maintained in good condition appears to pose relatively little risk to students and school employees. Accordingly, the AHERA rule rarely requires the removal of asbestos materials."

The key word seems to be "requires", for previous guidance does indicate a number of circumstances where removal could be appropriate. Further, the ABCs booklet says:

> "The final response action, asbestos removal, is generally necessary only when the material damage is extensive and severe, and other actions will not control fiber release. Although the AHERA rule does not prohibit schools from removing any asbestos material, removal decisions should not be made lightly. An ill-conceived or poorly conducted removal can actually increase rather than eliminate risk. Consequently, all school removal projects must be designed, supervised, and conducted by accredited professionals, and should be performed in accordance with state-of-the-art procedures.... The final selection is up to school officials after they receive the advice of the school's accredited management planner."

Page 10 reinforces the earlier statements with:

> "Federal regulations do not require the removal of all friable asbestos from schools until the building is demolished. In fact, during the life of the building, other methods of dealing with the material are often preferable to removal."

Nothing is said about NESHAP requirements for removal before renovation or demolition. Newspaper clippings and educational publications examined in this review indicate that removal is frequently related to renovation projects in school buildings.

Managing Asbestos in Place, a Building Owner's Guide to Operations and Maintenance Programs for Asbestos-Containing Materials (The Green Book). Although the Foreword

says the Green Book "does not supplant the Purple Book," it strongly emphasizes management in place and as opposed to removal. This new emphasis, while not identified as a changed approach, is described as "based on our experience since 1985," and:

> "It expands and refines the Purple Book's guidance for a special operations and maintenance program. In particular, the guide more strongly emphasizes the importance of in-place management. The guide's purpose is two-fold. First, it offers building owners the more detailed and up-to-date instruction they need to carry out a successful O and M program. Second, it informs building owners, lenders, and insurers that a properly conducted O and M program can in many cases be as appropriate an asbestos control strategy as removal. Furthermore, in some cases, and O and M program is more appropriate than other asbestos control strategies, including removal." (p. vii)

The "Five Facts" are then introduced (pp. vii, viii) to "help calm the unwarranted fears that a number of people seem to have about the mere presence of asbestos in their buildings and to discourage the spontaneous decisions by some building owners to remove all asbestos-containing materials regardless of its condition."

Three of the Five Facts are related to removal, and raise issues not raised in the "danger" context by previous guidance:

> "By their nature, asbestos removal tends to elevate the airborne level of asbestos fibers. Unless all safeguards are properly applied, a removal operation can actually increase rather than decrease the risk of asbestos-related disease... Asbestos removal before the wrecking ball swings into action is appropriate to protect public health. At other times, EPA believes that asbestos-removal projects, unless well-designed and properly performed, can actually increase health risk." Fact 5 "recommends a proactive, in-place management program whenever asbestos containing material is discovered... This does not mean, 'do nothing.'"

Management-in-place is briefly described, with the reminder that it may be all that is necessary until the asbestos is disturbed by renovations or removal.

The strong stand against removal is softened on Page 8:

> "But O and M procedures alone are not sufficient for ACM that the inspector determines is significantly damaged, and may not be sufficient for some types of ACM...some form of full scale abatement--repair, encapsulation, enclosure, encasement or removal--will be required. Removal...may also be appropriate when performed in conjunction with major building renovations or as part of long-term building management policies...as covered by EPA NESHAP requirements..."

There are a number of other references to the NESHAP requirements.

The only references to schools note that AHERA does not require removal, and describe some of the AHERA inspection requirements as examples for operators of other buildings.

Although previous guidance had referred extensively to higher asbestos fiber levels in schools than other buildings and the ambient air, and to the special problems of school children and asbestos exposure, neither the Green Book nor the covering letter to School

Officials, which essentially does little more than repeat parts of the Foreword in letter form, give any indication that the concerns have changed or have been superseded by new scientific information. The letter does not indicate, for example, that previous information about schools is no longer valid if, indeed, such is the case. The letter says:

> "The new guide is important because in-place management should be the cornerstone of your school asbestos control program, as documented in your management plans under...AHERA."

but does not acknowledge that available guidance material, including the 1988 summary of AHERA requirements. Nor did it attempt to explain the change in direction, except to refer to the Five Facts, which do not mention schools. It does, however , suggest they might want to revise their management plans, based on upcoming mandated inspections, with the new guidance in mind.

It should be noted that the earlier version of the Five Facts, as presented by Assistant Administrator Fisher in testimony before two House Subcommittees in April and June, 1990, included much more in the way of explanatory comment. For example, she said:

> "The mere presence of a hazardous substance, such as asbestos, on an auditorium ceiling, no more implies disease than a potential poison in a medicine cabinet or under a kitchen sink implies poisoning." (P. 10)

[Note: while it is unlikely that many LEAs ever saw this testimony about the Five Facts, it should be recalled that both the Blue Book and the Purple Book used pictures of scarred auditorium and gymnasium ceilings to illustrate in-school hazards]. Although earlier in her testimony she described the AHERA and ASHAA Programs (ASHAA provided $245 million in grants and loans for LEA abatement efforts), in her summary of the Five Facts, she said:

> "EPA's asbestos program for schools and its guidance for other building owners, which is founded on in-place management, is designed to keep these low prevalent fiber levels low, through recognition and management." (P. 15)

There is no indication in the testimony, however, that most of the $245 million (including that spent in 1990) funded removals, and that the strong emphasis on in-place management might be considered by school districts as a change in direction that differed from all previous guidance from EPA except for the ABCs.

Advisory to the Public About Asbestos in Buildings, distributed to LEAs over the Administrator's signature on March 6, 1991. This version of the Five Facts, is tailored to a school-related audience, and is much longer and much more explanatory than the Green Book version; it contains a great deal of material that did not appear in the version sent to LEAs in 1990. It opens with a statement about the current asbestos controversy, saying, "Unfortunately, some these (reports) may have confused, rather than enlightened, the public about the potential health risks of asbestos exposure and...EPA policies regarding asbestos in schools and other buildings." Among the things it says are:

> "...Present scientific evidence will not allow us to state unequivocally that there is a level of exposure below which there is a zero risk, but the risk at these low levels in fact could be negligible or even zero...
>
> "Fact Two: Prevailing asbestos levels in buildings--the levels that school children and

you and I face as building occupants--seem to be very low, based on available data. Accordingly, the health risk we face as building occupants also appears to be very low.

"Fact Three: Removal is often not a school district's or other building owner's best course of action to reduce asbestos exposure.

"It is important to understand that, for most situations, EPA's asbestos regulations for schools under the Asbestos Hazard Emergency Response Act (AHERA) do not require removal of asbestos. These regulations allow the school to decide whether asbestos removal, or some other response action is the best option to protect the health of school students and employees. In general, asbestos removal is most appropriate when asbestos materials, such as pipe or boiler insulation, are damaged beyond repair.

"Although we believe most asbestos removals are being conducted properly, asbestos removals by their very nature disturb the material and significantly elevate airborne fiber levels...

"Prior to a major renovation or demolition, asbestos material that is likely to be disturbed or damaged to the extent that significant amounts of asbestos would be released must be removed using approved practices under EPA's asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP) regulation... Clearly, asbestos removal before the wrecking ball swings into action is appropriate to protect public health. However, this cannot be said of arbitrary asbestos removal projects, which, as noted above, can actually increase health risk unless properly performed. This, in part, is why EPA has not mandated asbestos removal from schools of other buildings beyond the NESHAP requirement, which has the effect of gradually and rationally taking all remaining asbestos building materials out of the inventory...

"...In Summary, EPA's best advice is neither to rip it all out in a panic nor to ignore the problem under the false presumption that asbestos is 'risk free.' Rather, we recommend a practical approach that protects public health by emphasizing that asbestos material in buildings should be located, that it should be appropriately managed, and that those workers who may disturb it should be properly trained and protected. That has been, and continues to be, EPA's position..."

Again, this document, like the Green Book, does not reflect any of the specific concerns about school children expressed in earlier asbestos guidance materials.

3. Other EPA Publications

Environmental Backgrounder on asbestos was issued by the Office of Public Affairs in November, 1988, and the following year, but did not dwell on the issue of removal vs. management-in-place.

The first EPA Scorecard, published in April, 1989, hailed two asbestos developments:

"Ban on New Asbestos Products: Broke ten-year stalemate to ban almost all asbestos-containing products in U.S; and, later

"Loans and Grants: Around $45 million in loans and grants to help nation's most financially needy primary and secondary schools abate asbestos hazards...."

In December 1990, Meeting the Environmental Challenge: EPA's Review of Progress

and New Directions in Environmental Protection. Administrator Reilly's opening message (P. vi) says:

> "EPA announced a ban on almost all new uses of asbestos in the US by 1997. And EPA launched a management and communications review to assure that Agency guidance on the most effective ways to reduce asbestos risks--often by managing asbestos in place--is understood by schools, building owners, community officials, lenders, and others."

2. What Others Said

a. Educational Publications

1. Pre-AHERA (1972-86)

The National School Board Association publishes a magazine, the American School Board Journal, issues advisory information to member school boards, testifies before Congress, and holds informational conferences. Its publications indicate asbestos removal was going on Pre-AHERA, and that the during the Congressional consideration of AHERA, the Association opposed inclusion of mandatory removal requirements in AHERA. Although the Association did not favor enactment of AHERA, it did not oppose it but worked against specific proposals such as a removal requirement. The American School Board Journal, March 1985, on "The Issue Catches Fire," published three asbestos articles. One, by attorneys Daniel A. Speights and Edward J. Westbrook deals with law suits by school districts against asbestos manufacturers to recover the costs os asbestos abatement, opens:

> "If you already rid your schools of asbestos (or are on the verge of doing so)..." Later, they note, "some school board members worry that, by initiating litigation against asbestos manufacturers they might open the schools up to suits by teachers or students for costs of medical monitoring or, worse, personal injury suits alleging the schools fault in causing inhalation of asbestos fibers.

And, later on, "if you do the abatement work and don't seek cost recovery costs you risk suits by irate taxpayers."

The second article, an interview with attorney Herbert B. Newberg, deals with the same subject and makes the same points.

The third article, by Associate Superintendent Victor J. Ross of the Aurora, Colorado, school system, is titled, "When a school asbestos problem surfaces, act swiftly---and still suffer the sting of bitter public criticism," points the finger at EPA for alarming people about asbestos. It opens:

> "Asbestos might not be to 20th-Century America what bubonic plague was to Europe in the Middle Ages, but it seems to be generating nearly as much fear in the hearts of this generation of humans... As a school administrator who has wrestled with the problem of asbestos in school buildings, I am not as convinced that tiny asbestos in the air will produce as much cancer (and death) as the Environmental Protection Agency (EPA) would have us believe. What I believe, however, doesn't count. I've learned that folks who send their children to our schools generally do believe it, and for school administrators, that's what counts."

According to Ross, the Aurora school board reviewed EPA guidelines and launched an effort to test all buildings for asbestos, post notices, and organize a program to remove or encapsulate any asbestos found. Twenty school were posted, in 11 asbestos was encapsulated. "Were the Aurora schools safe now? We certainly thought so." But what ensued was a saga of sloppy contractor work, further structural problems with asbestos ramifications, closing a school, a loss of trust (on the part of teachers and parents) and a bitter controversy with threats of union action and law suits, all played out in the press. Concludes the writer, dealing with school asbestos problems is "going to be burdensome, costly, and time-consuming."

Another important source of information for school officials is American Schools and Universities magazine. From 1980 on, the magazine published more than 20 articles on asbestos, many of which dealt with asbestos removal. It was not until passage of AHERA and issuance of the AHERA rule that alternatives to removal were given significant attention. Although removal continued to receive considerable emphasis, by 1989 and 1990, more and more attention was directed at O&M.

For example, the March, 1980 issue, featured--"Will government fund asbestos removal--This district didn't wait," (Page 32, ff.)-- a story on a New Jersey school district that approved a $26 million bond issue--"the largest such project approved to date in the nation." The decision to go ahead with the removal was based on an evaluation of the district's problems by Dr. Robert Sawyer of Yale. The story describes the district's intensive promotion and news media campaign to obtain bond issue approval in the face of local voter apathy. In describing a last-minute town meeting, the article notes the presence of EPA representatives which "lent weight and authority to the administration's proposed solution to the problem."

A December, 1980 article, "Asbestos Removal: How Safe is Safe? " (P.42 ff.) deals with worker safety and asbestos removal. In January, 1984, "See You In Court (pp 24-15) by attorney Edward J. Westbrook, is about school district suits against asbestos producers "to recover the enormous costs of removal." It is written in alarming terms such as: "America's schools are filled with millions of tons of asbestos-containing sprays and other products. Many of the workers who installed them are already dying from asbestos-related diseases." And, "asbestos products in the school have caused (and will continue to cause) serious injury to students, school personnel and school property...While school districts are obviously unable to do anything about past asbestos exposure in their schools, they are acting to reduce the possibility of future exposure by removing the asbestos hazard now."

February, 1984--"Once and For All--When Inspection Revealed Asbestos, West Haven wasted no time--using a unique approach every trace was removed within a month" (P. 39 ff.) tells about the West Haven, Connecticut school district's asbestos removal project which followed the EPA required inspections, noting, "while EPA regulations require only reporting and monitoring of the problem, West Haven elected to remove it altogether." The district school superintendent is quoted:

> "West Haven felt that in the long run, we were better off with total removal. Taping required a great deal of auditing and maintenance. Encapsulation was good, but once again, whatever was used to encapsulate could be damaged and you'd have a continuing problem. There'd be no auditing, no maintenance; the problem would be solved permanently."

A cautionary note emerges in April 1984, in "Asbestos Abatement--Start to Finish" by

asbestos consultant Edward Makruski (P.59-ff). An introductory sidebar says:

> "The EPA surveyed the largest school districts in the nation to determine compliance with its '83 deadline for inspection and notification of friable asbestos. The result: over 50% have not inspected for asbestos or have done so improperly. Two-thirds of these districts failed to notify parents or did so inadequately. While the EPA currently does not require abatement of asbestos, its recent internal report suggests that the agency is considering tougher regulations."

And the article itself begins:

> "While every school district should remove and replace asbestos as soon as possible, the fact that wee are dealing with a potent human carcinogen calls for careful planning. An ill-planned, ill-timed asbestos abatement project can disrupt school activities, contaminate the building, cost more than it should and generate a public relations nightmare for the administration."

Under "preliminary planning" the writer says:

> "Little help is available from state and federal agencies, and no law or regulation specifically requires the abatement of an asbestos hazard."

In describing abatement options, removal is included as one approach but not as the only one.

The first time an EPA official participates in one of the magazine's asbestos articles is in the February, 1985 issue (P. 11-ff.) when Susan Vogt, then acting director of the EPA Asbestos Action Program, joined an AASA lobbyist, the president of an alliance of former asbestos manufacturers, the head of the National Asbestos Council, an architect, and a U.S. Senate committee staffer in "a lively and informative discussion of the statutes and outlook for asbestos abatement in our schools." Asked if it's fair to put on the school administrator the task of making public health decisions," Ms. Vogt said:

> "It's difficult to know who should be assigned that task..every asbestos situation is a very specific situation... Decisions about correct abatement actions are best made by local people."

On the subject of parent concerns, architect Lee Brockway said:

> "I work with a number of PTA groups and I can see that anyone presenting them this algorithm (an EPA formula related to the amount of asbestos present and its danger) as a reason for not removing asbestos would be like trying to stop the water coming through a broken dike...if asbestos is identified, parents of school children are going to ask that we get rid of it."

Another participant interjected, "they're under enormous pressure to move immediately, to remove it as soon as they have identification," to which Vogt replied, "and a standard, for that matter, I don't think would change the minds of the public." The architect also said:

> "Our clients have found that encapsulation doesn't reassure the people in the community, the users of the buildings, and the parents of students. Encapsulation

leaves the asbestos in the building...they are concerned about...the future...The attitude expressed by the parents and the community make administrators feel uncomfortable with the encapsulation process."

The SBA representative cautioned about the dangers of improper removal, adding, "there are very few contractors qualified to conduct removal work properly so it should be a remedy of last resort."

In a March, 1985 article on "Asbestos: 1985/86 Budget Priority (P.84 ff.) by former school superintendent Frederick Hill:

"There may be some arguments about what is friable--dry, disintegrating, exposed asbestos that can or does release fibers into the air--but most school officials have taken the common sense approach: if there is any question of possible hazard, get rid of it."

A year later, February 1986, "Asbestos Removal in Schools: Step Carefully to Breathe Easily" (P.34), by consultant Lawrence Liss, points to the need for architects, engineers and industrial hygienists on a school's "removal team". It begins:

"School officials must confront how best to remove asbestos from their buildings if only to prevent huge legal judgements, loss of liability insurance, government sanctions and public panic...The Environmental Protection Agency estimates it will cost at least $20 billion to remove the hazardous asbestos material still remaining in the nation's schools. These costs may easily multiply if districts don't manage the removal process in the best way."

There is also a brief update of the previous year's roundtable in which Susan Vogt participated (p. 34) In it, Ms. Vogt describes the new training centers at various colleges and says insurance companies will be less resistant if proper training is given to contractors. Other participants say, "the EPA in 1985 has done an excellent job, and the initiative is passing back to them, where it belongs" and, from the Safe Buildings Alliance, "To the EPA's credit, it took a more practical approach to the problem and evidenced a significant change in tone in revising its technical guidance with the publication of its 'purple book'."

The last pre-AHERA story, "An Innovative Program for Removing Asbestos," is a reprint from School Business Affairs, telling how the Houston school system went about removing all asbestos from 144 schools. It notes parental concerns and emphasizes community awareness concerns.

PTA Today, February 1985, article, "Asbestos in Your Child's School, How to Get Rid of It." (pp 18, 19): The article points out that no federal law requires removal of friable asbestos but that some states may be moving in that direction. Under alternatives to removal, it cites encapsulation and enclosure. The article calls on parents to tell schools that have not inspected that they are violating the law and to alert other parents and the school board to the need for an inspection and possible cleanup.

"If nothing is done, notify the EPA. If the school has a problem, suggest to the school board that the areas with airborne fibers be shut off. For a committee...Get information from the EPA Office of Toxic Substances...Urge the school board to select a qualified firm to inspect and remove asbestos...During the actual removal, it is important for all persons other than authorized personnel and trained asbestos workers to stay out of

the areas--away from removal activities and asbestos waste dumpsters--to avoid possible exposure..."

It also discusses the complexities of removal.

School Business Affairs, published by the American Association of School Business Officials International, had several articles. The first, in December, 1986, mentioned earlier, dealt with the Houston School District's removal program.

2. Post-AHERA (1986-1988)

On May 18, 1987, the National School Board Association's Federal Relations office sent out a bulletin to members on the legislative history of AHERA, attributing congressional motives to "frustration with EPA and pressures of election year politics, including pressures from building service employees, teachers unions and the National PTA. Saying:

"For the first time, AHERA creates a federal requirement for public and private schools to abate asbestos hazards.." and "...schools found to contain friable asbestos must then develop and implement asbestos management plans to repair, enclose, encapsulate, or remove materials using certified contracts." Under "Accommodations in Ahera to PRESENT concerns (P. 3)" the Bulletin lists "requirements of EPA to set clear standards describing when asbestos should or should not be abated and prescribing only the least burdensome methods--including alternatives to removal."

The bulletin also references the Purple Book, as "the binding document until EPA issues new regulations."

A new 7-page Bulletin on December 10, 1987, highlights major issues and summarizes the new EPA AHERA rules. In bold type on page 2:

"It is important to note that neither the regulations nor the statute require the removal of asbestos-containing material, except in those circumstances where it is the only response action that protects human health and the environment." That statement is preceded with, "the regulations require an on-going operations and maintenance program for any building where asbestos exists."

Calling the regulations "quite complicated", the Bulletin recommends an attorney review planned actions "Because there are substantial penalties." Page 3 reflects pressure to move quickly: "...if your district is planning some abatement, you will want to assure the that staff has arranged with contractors to perform these activities during week-long holidays or summer vacations. Contractor schedules are quickly filling up, so staff cannot afford to wait..."

The Bulletin also notes that an EPA estimate of $5,350 per year per building for a typical management program "does not cover the cost of removal, if that is determined to be the appropriate response action."

The first post-AHERA article in the ASUA magazine appeared on February, 1987. (P. 47 ff.) Entitled, "AHERA Update--Final Asbestos Regulations Released by the EPA," it was adapted from the National Asbestos Council's NAC Journal. It heavily emphasizes the inspection and surveillance requirements and quotes the Question and Answer material sent out by EPA with the AHERA rule announcement. This included:

"Q: Do the regulations require schools to remove ACM? No. The regulation requires schools to choose a response action which protects human health and the environment. The range of response actions the school can choose depends on the condition of the ACM. The response action is chosen by the school with the assistance of the accredited management planner. A school may choose to remove ACM if removal is the preferred response action."

The same issue contains advice from the President-elect of the NAC on "Choosing the Consultant/Inspector" (p. 51,52), opening with:

"Removal of asbestos-containing material can be a costly and disruptive process. Schools often opt to manage their asbestos by deferring removal to a time in the future when capital is available and better planning can be achieved. To keep the environment safe in the continued presence of asbestos, schools that manage asbestos must implement an operations and maintenance program that will clean up asbestos fibers already in the air, reduce the danger of future release of fibers by minimizing damage to asbestos-containing materials, and monitor asbestos conditions on a regular basis..."

A School Business Affairs article, in 1987 (date not available), entitled "Self Insuring Against Asbestos Removal," deals with legal aspects of removal, noting:

"The only permanent solution to the problem is removal of asbestos materials and it is the recommended course of action by the United States Environmental Protection Agency."

The Orange Book is cited as the source of this statement.

3. Report to Congress to (1988 present)

In March, 1988, PRESENT communications indicate the group had joined other school groups in lobbying for an extension of the October 12, 1988 AHERA compliance deadline because of the shortage of certified inspectors and accredited management planners in the private sector, the scarcity of EPA training courses for school district personnel, and a shortage of accredited laboratories for AHERA-required testing.

The American School Board Journal that same month, under the headline, "Asbestos: Here's what you have to do to avoid fines of up to $5000 a day", a story written by attorneys Stephen L. Braun, Luis M. Nido, and Martin W. Dies, Jr., begins, (P. 35-37):

"When school board presidents get together these days, the usual shop talk...is likely to be pushed aside in favor of questions and comments about asbestos inspections. Some school systems have already lined up inspectors to give their school buildings the careful scrutiny required under the new Asbestos Hazard Emergency Response Act...still others are confused about exactly what their responsibility is. No wonder, the school asbestos story is a painful and confused one, and the latest chapter, initiated by the passage of AHERA, is not likely to be the last.... For the full story on what is required, school systems (and their attorneys) should consult the regulations...the new EPA regulations go much further (than earlier requirements) by calling for timely action sufficient to protect human health and the environment. According to the regulations, this does not necessarily mean removing all asbestos, though that is, of course, the most effective way of alleviating the hazard (p. 37)."

The October 1988 Journal scolded laggard school boards, but put much of the blame for slow action on EPA. In an article entitled, "Asbestos: Stop Dragging Your Feet" (P. 14), which reported that some systems were complaining that the seven month AHERA compliance deadline passed by Congress was still not long enough, the publication says:

> "And maybe you were right to complain. Maybe seven more months isn't a big deal when we're looking at a ten-year record of foot dragging. That's right--at least 10 years. The first Journal cover story laying out the dangers of asbestos in schools appeared in November 1978. And we were reporting on a danger that had already been acknowledged by the United States Environmental Protection Agency in 1972... Subsequent research left little doubt that the versatile substance could cause cancer and posed dangers to the developing lungs of children."

The article then describes EPA "moving with customary caution" going through the Technical Assistance Program and the 1982 rules requiring inspection and notification. Next came AHERA because "...by 1986...nothing much had happened...approximately 30 percent of the US school system hadn't even inspected for asbestos--never mind removing it."... Noting that dealing with asbestos:

> "...Can be a terrible financial drain... It's true, too, that the leadership (and assistance) EPA was able to offer was inadequate, to say the least. Most of the money Congress authorized to help schools deal with asbestos never was appropriated. EPA lacked inspectors... You could say that all these circumstances invited school systems to become scofflaws--if you think it's okay for school systems to play by the same rules as industrial polluters... Some school systems have rid themselves of asbestos...but while the others have been trying to decide what they could afford to do--or trying to avoid the problem altogether--students and staff members have spent ten years at risk. It's a long time."

The same month, October 5, 1988, NSBA distributed a summary of the Proceedings of the 1988 NSBA Federal Policy Coordinators Asbestos Workshop, entitled, "Asbestos Issues--What You Should Know about AHERA Compliance, Liability, Contracting, Future Legislation." Major workshop emphasis was placed on the legal aspects of AHERA compliance, and on the significance of the seven-month extension of the compliance deadline. David Kling, Acting Chief, Hazardous Abatement Assistance Branch, EPA, was a participant. He told the workshop (Pp.3-4):

> "...There are abatement options under AHERA. Removal is neither prohibited nor is it required; it is simply one abatement option--and it may not be the preferable option. Where asbestos is undamaged or nonfriable, it's, better to manage it in place until a major renovation is undertaken. If asbestos is friable...removal may be the most appropriate abatement response."

He emphasized that AHERA:

> "Is an inspection and maintenance plan program, not a removal program. AHERA allows you to select the appropriate response, whether that be operations and maintenance, repair, encapsulation, enclosure, or removal. You won't find EPA second-guessing you if you stay within this range."

The publication offers a number of EPA resources, including Asbestos in Schools: A Guide to Federal Requirements, 100 Commonly Asked Questions About the New AHERA

Asbestos-in-Schools Rules, and the ABCs of Asbestos in Schools (which, it turned out, did not become available for another year.)

NSBA's School Board Business Briefs in the summer of 1989 reported a survey of 671 school districts in 44 states that showed 98 percent compliance (higher than an EPA survey had shown for all districts) and that responses indicate EPA had underestimated potential costs to school districts by at least fifty percent.

In the AS&U Magazine, July, 1988, there is a lengthy article, "Asbestos Abatement, What AHERA Could Really Cost" (P. 70 ff.) by environmental law and conservation consultants Martin S. Rulstein and Dunewood Truglia. The article concludes that "governmental estimates of AHERA compliance with inspection and planning requirements are "low by a factor of three." Among the reasons cited are:

> "In the absence of knowing what costs are reasonable by industry standards from reputable, skilled consulting firms, and those who will perform below required standards. Such fly-by-night, unskilled professionals will have their place with the rip and run asbestos firms who did so much harm already....The work must be done within the context of a litigious society, with formidable incentives for environmental issues, particularly where the protection of children is concerned...within the context of potential litigation and the uncertainty of government's stance on enforcement, we do not believe that saving ...will be possible or even advisable due to the fact that the LEA is charged with ultimate responsibility for compliance."

A February 1989 AS&U article, "Proper Selection of an Asbestos Management Consultant and Contractor is Essential "(P. 37 ff.) by Douglas Mueller, a consulting engineer, focusses on selection and hiring of asbestos management consultants and "removal contractors." It does not deal with any other abatement response. In March, in a special section sponsored by the Association of Wall and Ceiling Industries p. 142 ff.), an article entitled, "Asbestos Needs Good PR" tells how building owners, including schools, should handle asbestos management from a public relations viewpoint, calling for a well-thought-out communications strategy.

Then, in June 1989, it's back to the horror stories, with an article entitled "The Asbestos Nightmare" (P. 43 ff) by Paul Winslow, an architect and consultant, who warns about the pitfalls of abatement:

> "...increasingly, careful planners are being caught in that nightmare by a series of government regulations; asbestos procedures...you've been told you don't need to do anything about your asbestos problems until you remodel, so every year you report your asbestos and forget about it. Suddenly, your board decides to remodel... Of course, you'll plan the construction for the summer, school in recess. But asbestos abatement doesn't understand about time or deadlines. When asbestos is uncovered under a roof, for example, it can become friable and dangerous... Before you know it, you're not only reroofing your building, but replacing the ceilings as well... The strict rules for asbestos abatement don't show concern for the value of property inside the building, either... Typically, administrators are caught short by the abatement procedures, committing too little time and too few resources to them at first... Asbestos may be as dangerous in the environment as the EPA would like you to believe, but the rules for its disposal cause even more problems... The process of removing asbestos can often be more expensive than the remodel that precipitated it. Because very few contractors know how to handle asbestos abatement, costs are high. And unsupervised, the job is sometimes not completed correctly."

In June, 1989, environmental health consultants and EPA trainers Steven Pike and Elizabeth Shandley, an article entitled, "Districts should make health protection the driving force in asbestos abatement--Philosophy for asbestos control, (p 37 ff.), finds the authors urging school districts to focus first on health protection rather than legal compliance. They say they usually recommend O and M operations to school districts, saying:

> "This O&M activity can be maintained indefinitely until either the functional space requires renovation or demolition, or the sampled area can no longer be maintained in a state of repair that prevents the release of asbestos fibers."

However, removal is considered by them to be a part of O&M, not something different.

Other AS&U articles include, August 1989, Asbestos Walk-Through--Care must be taken in the removal of asbestos floor tile" (P. 24 ff.); a February 1990 series of short articles on how schools can manage various "Hazardous Materials" (p. 28 ff.), which includes a short piece by Janet Oppenheim McMullen, acting executive director of the Asbestos Abatement Council, who calls for adequate planning and identification, training maintenance and custodial personnel, developing O&M procedures, concluding: "simply stated, ACM should not be removed unless all options to manage it have been tried and found inadequate."

A March 1990 article, "Is Your School in Compliance With AHERA?" (P. 133 ff.) by James A. Brownlee, a New Jersey asbestos control official, reminds school districts that AHERA will be enforced and they must be sure their districts are in compliance. An interesting note is the writer's urging district officials to take the time to understand their approved plans:

> "...Protecting building occupants and the environment is the objective that moved AHERA ahead... The costs associated with this initiative to date do not allow careless implementation of the management plan or refusal to comply. It makes perfect sense that LEAs who have invested time and money to develop a comprehensive document that focusses on management of asbestos should take the time to completely understand its content and devote the necessary resources to see it implemented."

In April, 1990, a short ASUA magazine article is devoted to EPA's "Recommended Interim Guidelines for Stripping Asbestos-Containing Floors" (P. 53), and in August 1990, it's back to removal with a story on how Anchorage, Alaska, removed all the asbestos from a high school. (P 31). The writer, architect and environmental consultant C. William Echols, notes that:

> "Anchorage become one of the first districts in the nation to comply with EPA's original voluntary program for identification of asbestos containing materials. The district recognized very early the health hazards associated with asbestos in schools and allotted funds to make asbestos removal a high priority."

Earlier statements about removal in School Business Affairs are contradicted in the December, 1988 issue in a series of articles about AHERA (pp 23 ff.) included one, entitled "Don't Fall Into the Response Trap" by Elizabeth Shanley and Steven Pike of an environmental health consulting firm, which emphasizes that "nowhere in AHERA is there a requirement for asbestos removal.". It also says:

"Well-intentioned but unrealistic goals of asbestos removal will certainly guarantee that the LEA will be haunted by AHERA for many years to come."

It goes on:

"...the regulations are specific and response actions defined, but they allow the LEA plenty of flexibility of choice. If the LEA understands the wealth of appropriate options available, the result will be better decision-making and use of financial and human resources."

"...ong the common response action traps to avoid are unrealistic optimism and or ...usiasm about removal," the authors write.

"Often a school district with a history of asbestos issues is so fed up with inspections and reinspection that they come to regard complete removal as the answer to their prayers. Sometimes these districts have problems with community sensitivity toward asbestos and deal with public relations challenges by planning the immediate removal of all ACBM." They describe O and M "as the most important response action--Operations and maintenance programs are essential prior to the implementation of any response action and, if properly designed, understood, and followed, will provide more protection to the occupants of buildings than any other response action."

Among the other articles is one by a consultant calling on LEAs to carefully consider liability issues, noting that:

"...AHERA created a liability nightmare by requiring decisions from people ill-equipped to make them. For example, the school first needed a designated person to lead the compliance with AHERA, however no specific training for this person is required. Though these people are usually competent authorities in other fields, the reading necessary would stagger a law student... This omission of training was a severe oversight."

The author, Arthur P. Dore, is a contractor. Another article, "Alert! Optional Response Actions," is written by Robert J. Shluzas, a manufacturer of encapsulation products. Among other things, he writes:

"At the time management plans are submitted, LEAs are usually not able to determine which technically acceptable response action will be the least burdensome method when it is not known what the costs will be in future years when the work is actually performed and the fact that LEAs do not know what funds are available."

He goes on to suggest:

"What you can do today is to keep your options open. Assuming more than one specific response action is determined by your and the Management Planner to protect human health and the safety, the LEA may choose to state both options in their management plans....This...keeps the interested parties such as parent groups better apprised of abatement choices."

He even includes a suggested statement to include in the plan:

"Not withstanding the specific response actions provided in this management plan, the right is reserved to utilize other acceptable response actions that are found

subsequent to this submission."

The Education Law Reporter, in a March 1, 1990, "Commentary: Contracting for Asbestos Abatement: What You Need to Know" (p. 1123), disagrees. The authors, attorneys Edgar H. Bittle, JD, and Jane B. McAllister, JD, LLD, say:

> "It is critical that those response actions not be summarized in the contract, but must be developed in detail. The contractor should specify what response actions were adopted, and why, as well as explaining what response actions were rejected, and why. This level of specificity is crucial to adequate protection of the school district from liability because it demonstrates the reasonableness of the district's actions."

One further citation: The Communicator, published by the National Association of Elementary School Principals, in November, 1990, had an article entitled, "Guide warns against hasty asbestos removal" which is the only mention of the Green Book found in any educational publication this reviewer was able to obtain. It describes the Green Book as seeking to dispel the myth that all asbestos must be immediately removed and sets out detailed guidelines for maintaining it safely. The story quotes EPA Administrator Reilly's speech and Assistant Administrator Fisher, then notes that EPA has been criticized for not releasing the guide sooner, adding.

> "An EPA staffer told Communicator the project has been in the works for three years, but was temporarily tabled to release resources to enforce...AHERA."

It goes on to quote the environmental hazard coordinator in the Fairfax, Virginia school system, as saying:

> "We've had a management plan in place since the early 1980s. But EPA guidance was sketchy. Many districts just removed their asbestos to avoid any liability. Some hired contractors that didn't get it all or removed it incorrectly."

After examining the school publications that were available, one can reach several conclusions: Much of the information, both for removal and cautioning against it, came from writers who had a potential financial interest in the matter, and little from came from official sources. While EPA was mentioned or cited frequently, only two EPA staff members--Dave Kling and Susan Vogt--were directly involved in a forum or other activity that led to an article or distributed report.

3. EPA's Response to Criticism

A review of printed materials, testimony, clippings, etc. finds that:

- EPA's response to criticisms of program, emphases or requirements, is rarely evident in printed materials or news releases, aside from a few letters to the editors and an occasional interview quote.

This is particularly striking because in several educational publication articles quoted above, EPA's cost estimates for removal/abatement, were sharply challenged. There is no evidence that the Agency responded to those articles. On the other hand, it is interesting that none of the school publications reviewed raised questions about the Science article.

While the Five Facts were developed as a response to the Science article, they have been used primarily in EPA publications and Congressional testimony, and in at least one

asbestos-related tradepaper, but not in larger-audience, general interest media that published articles based on the New England Journal and Science. EPA did send a letter to the editor of Science.

b. General Press

The perceived change in the nature of EPA's messages has become more controversial as time passes, especially after the Science article and the Administrator's speech on asbestos policy became grist for the editorial mills of columnists and other writers who have opposed federal policies on asbestos and believe EPA created unnecessary "panic" in the public mind about asbestos. Actually, how much a change in EPA position the Green Book represents is arguable--depending how it is viewed in terms of vested self-interest--and could be seen as an extension of a more prudent approach to school asbestos management that started with the Purple Book, but the perception of the Green Book as a major shift is reflected by a letter to OTS from the Sheet Metal Workers International Association, which has long been at odds with the Building Owners and Managers Association about dealing with asbestos in buildings. Wrote the union, on November 8, 1990, in a letter to Joseph Carra, Deputy Director of OTS:

> "We are not alone in believing that there has been a shift in EPA policy. I'm attaching a statement issued by the Building Owners and Managers Association which echoes our sentiments."

The attached BOMA statement read:

> "The Environmental Protection Agency (EPA) recently endeavored to 'set the record straight' on the facts about asbestos as currently known. The EPA presented these facts to Congress and the American people. BOMA members have reason to be encouraged by this recent shift at EPA. Inside you will find out what the EPA really thinks about asbestos in buildings."

(Note: While is recognized that for both organizations involved, describing EPA actions as a shift in approach is in their self-interest, they did see the strong emphasis on O and M as a major shift.)

A review of articles in national and local newspapers, news magazines, and some national business and other specialized publications includes a number of articles on different sides of the issues involved and also provides insights into how LEAs across the nation reacted to AHERA requirements.

Publicity about the health risk was apparently widespread at the beginning of the 1980s. For example, a nationally distributed United Press International feature appearing in the Dallas Morning News on January 19, 1990, reported:

> "...Little has been done to prevent asbestos exposure despite its known health hazard...between World War and the end of this century, well over half a million Americans will have died of asbestos-related diseases... Americans are facing a major public health threat...unless changed, we are destined to compound the deadly legacy of asbestos and start the clock clicking for the next forty years... There is no safe level of exposure and the only way to eliminate asbestos related diseases is to eliminate the material."

On April 24, the same paper published an Associated Press wire story reported more

serious consequences:

"...About 58,000 to 75,000 Americans die each year from diseases caused by exposure to asbestos years earlier...asbestos is ubiquitous and its effects, measured in disease and health, are staggering... Eleven million U.S. workers have been exposed to asbestos, but the long latency of asbestos related diseases means many who were exposed in the 1940s and 1950s are only now experiencing ill effects."

In 1985, the EPA came under attack from Rep. James Florio (D-N.J.) according to the New York Times of April 15 for failing to "order schools to remove asbestos because of 'pressure from the Office of Management and Budget.'" Similar stories appeared in the Washington Post of April 14 and 16; in the April 16 story the post said:

Rep. Florio "charged...the Reagan administration is prepared to sabotage all federal efforts to remove asbestos from the nation's schools."

The story also cites an EPA letter to the Service Employees International Union which had petitioned for such regulations:

"We do not agree that federal regulation is the best approach to hazards in schools and other commercial buildings."

The story also noted:

"Asbestos, once widely used in insulation, has been conclusively linked to cancer and a variety of serious respiratory ailments. The EPA estimates that about 15 million children and 1.5 million school employees are exposed to loose, or friable, asbestos."

The subject of asbestos removal was highlighted on August 1, 1985, when the Washington Times hailed publication of the Purple Book under the headline: "EPA alters asbestos advice, finds leaving it in buildings may be safer than removal." The Times story begins:

"Removing asbestos from schools and other buildings may not be the best way to deal with the cancer-causing fire retardant, the EPA says in an asbestos guide being published this week.

"In a major shift in policy, the EPA now maintains that 'if the asbestos is in good condition, you are probably better off leaving it there' than removing it, said Susan Vogt, director of EPA's Asbestos Action Program."

The article goes on to say the Purple Book's predecessor, the Blue Book, "which serves as the Bible for school administrators and building officials who are struggling with asbestos problems," noting that it advocated removal to eliminate the threat from exposure to crumbling friable asbestos, and says:

"In the revised policy--the Purple Book--EPA says, 'The presence of asbestos in a building does not mean that the health of building occupants is necessarily endangered.' It goes on to quote Susan Vogt again: 'Too often building officials have panicked and rushed into an asbestos-removal program that has caused more contamination than leaving the asbestos alone."

The article also said the EPA had still not adopted specific standards or exposure

levels.

This is the subject of a story in the March 19, 1987 Environmental Defense Fund newsletter, EDF News, headed: "Court and Congress Require EPA to Remove Asbestos Hazards." This article tells about an EDF lawsuit which ended in a settlement under which EPA agreed to establish standards and require abatement actions in schools. Because, according to the article, the settlement produced no result other than an EPA rule requiring a one-time inspection, Congress enacted AHERA to accomplish the desired purposes.

OTS provided the content analysis with a collection of newspaper clippings from daily and weekly newspapers in 39 of the 50 states. All were published in 1988, and most dealt with LEAs that had been undertaking, planned to, or were considering asbestos removal. What made them especially interesting is that many of the articles described asbestos abatement efforts already under way or being planned at the time the AHERA rules were promulgated and LEAs were involved in the required pre-implementation inspection, planning and approval processes. The Purple Book was the guidance document used during this time.

Newspaper stories from 21 states were reviewed. Of the 464 stories read, 80 percent involved past, on-going, or planned asbestos removal. By and large, most of the projected removals reported were part of the abatement plans developed by EPA-accredited management planners/project designers (sometimes described as contractors) and recommended as part of the AHERA process. A number of stories indicated LEAs were seeking or had obtained a postponement of the October 1 AHERA deadline for submission of plans for State government approval, most often because of delays in completing inspections caused by a shortage of available accredited consultants.

Much of the reported removals had been under way for a number of years and were attributed to earlier EPA asbestos-in-schools initiatives--especially the 1982 friable inspection and notification rule--or NESHAP or OSHA requirements.

Fifteen percent of the stories said, quoting LEA officials or other specific sources, that asbestos removal was required although it was often difficult to determine the nature of the so-called mandate. Some mistakenly attributed it to the 1982 rule, many seemed to mean NESHAP rules because renovations were involved, and some stories attributed the requirement to AHERA. Others said AHERA required "removal or control," or "removal or encapsulation."

[Note: It should be remembered that the 15 percent just mentioned is a segment of a relatively small number of newspaper stories selected by a law firm representing asbestos-related firms and provided for review. One should assume that the total number of news stories about asbestos that appeared in 1988 was many times larger than the sample available to this study, so that the percentage saying removal is mandatory is really a very small percentage of <u>all</u> mews stories about asbestos that may have been published that year.

A typical story dealing with the "mandate" and decision to remove is one from the Phoenixville, Pennsylvania <u>Evening Phoenix</u> of October 18, 1988:

> "Bucktown--The Owen J. Roberts School District re-opened the 1988-89 school budget last night to include more than $800,000 worth of additional expenditures--the largest of which is a federally-mandated asbestos removal program.

"...The Asbestos Hazard Emergency Response Act of 1986 requires that all schools remove asbestos or have management plans in place within the next three years. Superintendent Ray Claypool said that if the asbestos is not removed immediately, the district will be subjected to stricter regulations in the future.

" If we have this problem, let's not have it around for years. Let's gear up and get it taken care of now,' he told the board. Schools opting to encapsulate and manage asbestos, rather than remove it, must monitor the affected areas every six months..."

Few of the stories reviewed dealt with the dangers of asbestos exposure other than to use the words carcinogen and/or lung diseases as a one-time descriptor, and only two of the 464 stories indicated that local school officials did not believe asbestos to be a danger. Asbestos abatement, including removal, came through as an accepted fact of life, as in this quote from the North Carolina Catholic School of October 1, 1988:

"Our goal goes beyond compliance with the law," Sister Haney said. "We are committed to protecting human health and the environment."

In states such as Wisconsin and Connecticut some of the stories were confusing as to whether federal or state asbestos programs were involved.

What controversy was reflected in the clippings related largely to school closings and the problems that caused, not to asbestos removal. The main concerns found in the stories were:

(1) Where the money was coming from (bond issues, federal or State sources, deferral of other projects, etc.)

(2) School closings and the problems they caused. These stories ranged from the controversy (including student demonstrations over crowded, temporary but unsatisfactory learning conditions, etc.) in relation to the year-long closing of high schools in San Francisco and Sacramento, and an elementary school in Pawling, New York because of asbestos removal, to questions about week or month-long closings or delays in a new school year because of unfinished work or asbestos emergencies. In one, the basic issue was whether young children should be forced to walk along a heavily-travelled street to a temporary school.

(3) School attendance while asbestos abatement work was going on. This came up three times, and in each case parents were offered the option of keeping their children at home; in one situation, nine percent did. Otherwise there were only a handful keeping their children out of school.

(4) Litigation. The few such stories dealt with suits against asbestos manufacturers, suits against contractors for faulty work, liability as a reason for removal, and two cases, legal action against a school superintendent who ignored the asbestos removal recommendations of staff members who had just returned from EPA asbestos training schools, and one who had permitted removal by an unlicensed firm.

While there were occasional references to parental concerns, they were more of a reassuring nature and did not indicate there had been PTA or other parental pressure for asbestos removal. There were occasional references to school employees unions bringing pressure.

The national media continued to deal with asbestos in terms of its potential dangers. Time in its February 6, 1989 business section, headlined a story, "Monster in the Closet--The frantic campaign to remove asbestos could cost $100 billion". Focussed on asbestos in public and commercial buildings, the story said:

> "...many researchers contend that low levels of exposure are not necessarily hazardous. Since the mineral occurs naturally, trace amounts can often be found in fresh air and water. Yet EPA has said that the only guaranteed safe amount of airborne asbestos is zero... The demand for asbestos-removal service vastly exceeds the ability of the fledgling industry to supply it safely... Hundreds of cleanup jobs have been botched by poorly trained and badly equipped workers who send additional asbestos particles swirling through the air... The EPA is thinking of expanding the Asbestos Hazard Emergency Response Act, which requires all schools to draw up a plan to control or remove asbestos, using workers trained according to federal standards."

While EPA asbestos policies had been criticized from time to time, what ultimately became a major controversy was initiated on June 29, 1989, with the publication of an article in the New England Journal of Medicine by Drs. Brooke Mossman, associate professor of pathology at the University of Vermont, and Bernard Gee, professor of pulmonary medicine at Yale. The article, representing the first major shift in the medical perspective on asbestos, reviewed existing medical literature on health effects of asbestos exposure and concluded that the health risks from non-occupational exposure to asbestos in buildings are small, especially since most asbestos used in U. S. buildings is chrysotile, which, they said, posed little danger to the lungs. The authors were sharply critical of EPA's asbestos policies.

This article, and a successor in Science, were to be the basis of numerous published attacks on the EPA's asbestos policy. During the interim before the attacks began to appear, there were other significant stories on asbestos.

For example, U.S.News & World Report, in its July 17 issue, under the headline, "Erecting a fire-wall against asbestos," reported the EPA ban on future manufacturer of asbestos products, noting:

> "The ruling won't end the debate over asbestos already in place. Under a previous EPA regulation, U. S. schools were to start asbestos control or removal program by July 9. But many school systems, where asbestos was widely used as fireproofing insulation, are still unsure what to do. EPA Administrator William Reilly sided last week with experts who argue that it is often more hazardous to remove asbestos that is not leaching into the air than to leave it alone."

Newsweek, on July 17, reported the asbestos ban story under the heading, "Asbestos: The Long Goodbye." U.S.News & World Report returned to the subject of asbestos on September 8, with a story on "The Panic in Gramercy Park," a New York neighborhood where an underground explosion threw asbestos pipe insulation fibers into perhaps 35 buildings. In the story, the magazine said:

> "It would cost billions to remove asbestos from all underground systems. Nor is it necessarily desirable. Experts know that serious explosions are rare. And as with schools and buildings, removing asbestos often leads to more exposure than leaving it in place. The Environmental Protection Agency has required schools to develop asbestos plans. So far, most are choosing to leave the mineral in place. The agency

has put off for now any similar ruling for public buildings. In July, EPA banned all future uses of asbestos starting next year."

The New England Journal of Medicine surfaced as a catalyst for controversy in The American Spectator of October, 1989, along with a report of a subsequent Harvard Symposium which also reviewed existing medical literature and criticized the EPA stance.

A long "Special Report: The Asbestos Ripoff," by Michael Fumento (identified as the author of another expose, "The Myth of Homosexual AIDS"). The substance of the article can be taken from the various subheads:

"Coming soon to a school or office near you: a life-saving innovation that could kill you, designed to correct a problem that doesn't exist, by removing materials that aren't dangerous until somebody tries to remove them; and guess who's going to pay for it"... AHERA Today, Gone Tomorrow... Panic in the Malls... The asbestos alarmists do not operate alone. AHERA was signed into law by the supposedly anti-regulation Reagan White House without so much as a hint of a veto... Because asbestos occurs naturally in rock formations, everyone is exposed to it: in the air, in water, in food... Because asbestos abatement is so frightfully expensive when done properly, the temptation to do it improperly is immense... Stories abound of lower-class and immigrant workers who have been duped into believing asbestos removal was just a routine job, requiring no mask or special clothing... Abategate...."

Fumento concludes:

"As one scientist, writing of the op-ed page of USA Today put it:' asbestos is like a big sleeping dog. If not stirred up, it does no harm. If hammered or sawed upon, it may bite anyone near it.' The best way of dealing with asbestos in school buildings and workplaces is the way most homes with asbestos are dealt with: leave the material alone unless there is a special reason for it to be disturbed. To this end, it is good that the EPA ordered schools to identify the location of asbestos, both to prevent disturbance and to provide warning of possible dust dispersal if a disturbance does take place. Identification and management should probably be supplemented with periodic air sampling. If sampling shows dangerous levels of airborne asbestos, then and only then is removal or encapsulation warranted. (This assumes that EPA will finally set an air quality standard for asbestos, which it has not yet done... If bouncing a basketball against a gym ceiling disturbs fibers in the tiles (a favorite fanciful scenario of the abatement enthusiasts--how often do basketballs hit ceilings, and how much asbestos is going to be released with one hit?), then kids should be told not to do that. It's not a perfect solution. It's simply the most cost-effective--and the safest. Leave the sleeping dog alone. It will save lives and perhaps hundreds of billions of dollars. That should b e worth something, shouldn't it."

Business Week, in its November 20 issue, dealt with an Illinois Supreme Court decision supporting school districts suits against asbestos manufacturers. In explaining why schools were suing, the article said:

"...Small wonder. The Environmental Protection Agency figures about 20 percent of U.S. buildings contain some asbestos. The total cleaning cost, says the EPA, is a mind-boggling $51 billion. Schools have a special problem. They must pay the piper now. Other buildings must follow asbestos guidelines only when razing a structure. The EPA adopted rules two years ago ordering schools to contain or remove asbestos by July, 1989. So far, the Chicago school district's cleanup tab is $40 million."

The Fumento assault on EPA's asbestos program was condensed in the January, 1990, Readers Digest, giving it a much larger national readership than the original. In simplified language, the Digest article made such points as:

"...One of the biggest regulatory boondoggles in U.S. history. Its costs may well run into hundreds of billions of dollars nationwide. Worse, it could cause more deaths than it prevents.. Whatever the price, it is worth paying, because abatement will prevent the grisly deaths of thousands of Americans, especially school children... One of the highest estimates of the fatality rate from low-level asbestos exposure comes from a 1988 EPA study. It predicts that among the tens of millions of people who will circulate through all public and commercial buildings with damaged asbestos, 2530 asbestos-related deaths will result over the next 130 years. Yet the worst airborne asbestos levels in the EPA's building sample were no higher than the levels found in outside air! And you can't abate the great outdoors.. The EPA has estimated that by the mid-1980s as much as three-fourths of all asbestos abatement in schools had been conducted improperly..."

The Science article appeared in January, 1990. It is entitled, "Asbestos: Scientific Developments and Implications for Public Policy". Drs. Mossman and Gee were joined in co-authorship by Dr. J. Bignon, biopathologist and director of a French research institute, M. Corn, director of the Division of Environmental Health Engineering, Johns Hopkins School of Hygiene and Public Health, and A. Seaton, director of Scotland's Institute of Occupational Medicine.

The tone of the lengthy article is set in the abstract:

"...Available data do not support the concept that low-level exposure to asbestos is a health hazard in buildings and schools..."

It opens with:

"Asbestos engenders both fear and panic in U.S. Society.. A mandate from the EPA requires inspection of the nation's public and private schools for asbestos...resulted in the explosive growth of asbestos identification and removal companies..."

The authors reiterate the New England Journal of Medicine finding that the health risk from asbestos exposure in buildings is minimal--at one point, they use the word "minuscule," and say, "published risk estimates show that risks of asbestos-related deaths...due to exposure in schools are magnitudes lower than commonplace risks in modern-day society."

In the concluding paragraphs on public policy, the article says:

"The AHERA ruling of 1986 brought asbestos to the attention of the U. S. public and instilled fears in parents that their children would contract asbestos-related malignancies because of high levels of airborne asbestos fibers in schools. Panic has been fueled by unsupported concepts such as the 'one fiber theory,' which maintains that one fiber of inhaled asbestos will cause cancer. As a result of public pressure, asbestos is often removed haphazardly from schools and public buildings even though most damaged ACM is in boiler rooms or other areas which are inaccessible to students or residents. The removal of previously undamaged or encapsulated in airborne concentrations of fibers in buildings... Asbestos abatement also has led to the

exposure of a large new cohort of relatively young asbestos removal workers... "..The available data and comparative risk assessments indicate that chrysotile asbestos, the type found predominantly in U.S. schools and buildings, is not a health risk in the nonoccupational environment. Clearly, the asbestos panic in the U. S. must be curtailed, especially because unwarranted and poorly controlled asbestos abatement results in unnecessary risk to young removal workers.. Prevention (especially in adolescents) of tobacco smoking, the principal cause of lung cancer in the general population, is both a more promising and rational approach to eliminating lung tumors than asbestos abatement. Even acknowledging that brief, intense exposures to asbestos might occur in custodians and service workers in buildings with severely damaged ACM, worker education and building maintenance will prove far more effective in risk prevention for these workers."

Forbes picks up the discussion in its January 8 issue, quoting Dr. Mossman and citing the New England Journal of Medicine article as well as Michael Fumento's from The American Spectator. The article says:

"The result of the asbestos fiber phobia has been the overnight growth of what is now a $3 billion industry. Asbestos abatement outfits...have raised millions with new stock issues in the last two years. They have an easy sales pitch to building owners: Want to have tenants? Want to eliminate your liability? Then let us remove your asbestos problems." and asks: "Why do business people worry about asbestos abatement? Because it's the law in some cases. The EPA calls fir abatement when a building undergoes renovation that would disturb existing asbestos, and also prior to demolition, a sensible precaution. But even when abatement isn't in Congress' school law--it is often the most attractive option for dealing with asbestos because of questions over liability.

"...Alas, all this asbestos abatement isn't doing much good. The sad truth is that abatement usually raises the levels of asbestos fibers in a building, short term, endangering abatement workers..."

Another article in the same issue deals the with Mossman/Gee paper and other studies under the headline: "Some scientists believe asbestos in buildings not dangerous".

And Time, on January 29, covers the Science article in a story headed "An Overblown Asbestos Scare?: The dangers are minimal in most buildings, says a new study".

A number of articles in trade and industry publications over a period of months printed articles on the studies, repeating phrases like "the asbestos panic," and, depending on their specific audiences, frequently warning that these studies--because the downgrade the danger of asbestos exposure in buildings--may project a poor future for abatement-related companies.

Such articles appeared in publications such as the Engineering News-Record, Air Conditioning, Heating and Refrigeration News, Colorado Business, Industry Week, Environmental Waste Management, Occupational Hazards, and Architectural Record.

The February 7, 1990 issue of the Bureau of National Affairs' Occupational Safety and Health Reporter reviews the controversy the New England Journal and Science articles created, noting that several doctors had written letters to the editor criticizing the articles. One letter said, "It would be unfortunate if the article in the Journal...was used as an argument against asbestos inspection and, where necessary, abatement... The

abandonment of inspection and abatement is not justified." Another said the article "subtly presents the view of the asbestos industry... Contrary to the impression created by the article, the relation between lung cancer and exposure to asbestos has been established in numerous epidemiological studies."

In another expose-type article, "Everything You Know About the Environment is Wrong," writer Gregg Easterbrook, in the April 30, 1990 New Republic, writes, of asbestos:

> "Yet thanks to the front-page treatment of asbestos fear--given great play in the 1980s--there is a 1987 federal law requiring that asbestos be ripped out of public buildings. This causes fibers to become airborne, exposing workers to the one aspect of asbestos that is truly dangerous. The cost? EPA estimates $55 billion. Fifty-five billion dollars to save one life in 10 million. Aren't there far more promising public health investments?"

An article in the March 5 Asbestos Abatement Report introduced a new element into the asbestos debate the controversy a new element by reporting that a federal judge in New York had given the go-ahead to a lawsuit against the Yonkers, NY school board by a woman who claimed her husband died as the result of asbestos exposure while a student in a Yonkers junior high school.

The April, 1990 Asbestos Issues contained a special report "recording the reactions and opinions of the asbestos control industry" to "the debate sparked by the...Science article." It contains the EPA's official response and comments from Dr. Irving Selikoff. The introductory article notes:

> "one of the most prevalent concerns voiced by the medical, legal and asbestos control communities has revolved around the question of whether the Science article authors were objective and free of conflicts of interest. Specifically, observers have questioned the fact that some of the authors participated in the Harvard Symposium, which was sponsored by the Safe Buildings Alliance (SBA) an association of former asbestos products manufacturers"

An attorney is quoted as saying "only experts acceptable to industry were chosen to participate in this symposium."

EPA's position--this is the only in-print forum made available for analysis, although EPA also had a response in the June, 1990, letters to the editor in Science---was presented by Robert C. McNally, Chief of the Abatement Programs Development Branch in OTS. He noted that EPA agrees with the Science authors "that prevailing asbestos levels do seem to be low in public and commercial buildings, given the available data."

> "The EPA's asbestos programs for schools and its guidance for other building owners are designed to keep low levels low, through recognition and management," he wrote. "...EPA's regulations only require asbestos removal under two conditions: 1) before renovation or demolition activities which would disturb it and 2) in schools, if school officials themselves believe that removal is the appropriate way to control fiber release.
>
> "In place management, of course, does not mean 'do nothing'...an active in-place management program will reduce any unnecessary exposure of these workers and others. In short, the best way to keep low levels low in buildings is to recognize and properly manage any asbestos in them... "The point is to keep low levels low, as

exposure to any potentially hazardous substance is best controlled and minimized."

He noted also that the EPA study of 49 federal buildings cited by the authors:

"...while a useful indicator, cannot be considered representative of all government buildings, let alone buildings in general, since we lacked funding to do a more representative study and to control for in-place management programs, which tend to keep levels low."

McNally's article went on to review the ABCs of Asbestos in Schools and the Green Book and their approach to removal and management in place, the Agency's concern about the exposure of workers in buildings, and the forthcoming HEI study.

Selikoff's reply was in the form of a summary (by someone else) of his remarks at a forum on asbestos discussion of the article. He is quoted as congratulating the Science article authors for serving the cause of the asbestos manufacturers, and urging his audience to seek independent information about the risk exposure data presented by the authors. Dr. Selikoff said: "we have to proceed on our own agenda, assessing the degree of risk presented and our own plans for cleaning up those sites that involve serious exposures."

Another article on the controversy, using language similar to that in other articles on the subject, appeared in the July, 1990, Consumers Research magazine, including the statements about removal of asbestos increasing the risk of exposure. And still another, headed "Asbestos Debate Re-Emerges in Dispute Over Building Hazard" appeared in the New York Times on June 26. The Times presented both sides of the question rather extensively.

Administrator Reilly's speech, "Asbestos, Sound Science, and Public Perceptions," at the American Enterprise Institute on June 12, 1990, provoked further controversy. In the speech, Mr. Reilly said:

"Based on recent meetings I have had with school officials...on discussions I have had with members of Congress, and on the spate of inaccurate and sometimes tendentious articles and columns in the news media, it's clear to me that a considerable gap has opened up between what EPA has been trying to say about asbestos, and what the public has been hearing. EPA has been trying, especially in the last few years, to emphasize the importance of managing asbestos 'in place' whenever possible. We've stressed the approach because the unnecessary removal of asbestos-containing materials may actually pose a greater health risk than simply leaving them alone--so long as the materials are undisturbed and unlikely to be disturbed."

To illustrate what he meant, the Administrator cited the Downers Grove, IL,. school system which had just won voter approval of a million dollar bond issue "for safety improvements in its two high schools--including what was described as an expensive asbestos removal program." Mr. Reilly quoted a school board member as saying the removal was so expensive because it involved materials "buried deeply in the school's walls..." Said Mr. Reilly, "it appears on the face of it that this is an extreme over-reaction to the mere presence of asbestos."

Because Mr. Reilly had only a Chicago newspaper clipping about the bond issue, he did not have the whole story. According to a story in the Downers Grove Reporter that appeared on September 21, 1988, long before the Administrator's speech, the city's

schools were at that time already in the third year of an asbestos removal program, but that the program still had several years to go. Said the article, "the decision to completely remove asbestos instead of sealing it in plastic, made 3 years ago, has saved the district millions of dollars." Later in the story it is revealed that the source of the latter information, about savings, comes from the contractor who's doing the work.

The point of the story was that, under the new AHERA regulations, promulgated after the Downers Grove removal program began, the city could not meet the new AHERA plan approval deadlines and was asking for an extension of the deadline. According to school officials, the system had by then already removed 70 percent of the asbestos but saw the remaining 30 percent, "that sits behind brick and mortar'" as the tough part of the job. Part of the problem was laid at the foot of the federal government by Mart Schack, director of plants and operations. According to the article:

> "He added that District 99 faces two sets of constraints: those imposed by the U. S. government and those imposed by the school board. When work began in 1984, the board required that asbestos be completely removed, not just encapsulated with plastic. It also required the work be done during the summer, when students wouldn't be exposed to any asbestos that might leak from the removed areas. It will be at least 5 years before the last piece of asbestos is out of the high schools... The new rules, with their paperwork and restrictions, aren't helping the district's abatement efforts, Schack added. "I'm not so sure how much more difficult they can make it for us."

In February, 1991, the Downers Grove LEA was still at it, according to an editorial in the Reporter, which congratulated District 99 for its persevering in the protection of the children in its schools.

The Reilly speech came under sharp attack by writer Michael Bennett, author of "The Asbestos Racket", in the August 15, 1990 Washington Times. "Environmental Protection Agency Administrator William Reilly came close to admitting the organization is responsible for the greatest environmental fraud of our era, the asbestos scare." After going over the history of EPA's asbestos program, as he sees it, Bennett concluded:

> "Yet despite the administrator's seeming shift in philosophy, the EPA hasn't formally renounced its asbestos policy. Thousands of businesses remain at risk, and tens of thousands of people have been exposed to unnecessary health risks. The...senators should demand hearings to explore the EPA's political hypocrisy and to discover why the agency hasn't fully abandoned its ridiculous policies..."

A week later, the Times printed a rebuttal by Mark Weber, Director of Publications for the National Asbestos Council, who said the Bennett article "makes sweeping generalizations that may significantly mislead your readers."

> "Clearly," he wrote, "Americans believe that asbestos is a health hazard and they believe they should be notified when the Class A carcinogen is present where they live or work, according to a recent survey by he National Asbestos Council... Apparently, the American public does not want to be lulled into the false sense of security about asbestos that Mr. Bennett apparently espouses... What Mr. Bennett fails to prescribe is a traditional proactive management of asbestos which includes neither hysteria nor indifference. Even if asbestos is the greatest environmental fraud of our era, as Mr. Bennett claims, to completely deny that the problem exists and so claim that rational management of the problem isn't necessary is equally inappropriate."

The Times also published, on September 17, a letter from an Ann Arbor, MI, engineering consultant, who accused Weber, not Bennett, of misrepresentation.

Administrator Reilly's speech was also the subject of editorials in the Detroit News and the Ann Arbor News. Interestingly, Bennet used to be a reporter for a Detroit paper. The Detroit News heads its article, "Killing the Asbestos Myth" and says that's what Reilly did:

> "Many millions of dollars have been wasted on unnecessary asbestos removal. "Now who do you suppose said that?... The quotation appears in a press release of ...EPA Administrator William K. Reilly. The statement accompanied the release of a new guide book, "Managing Asbestos in Place."...The EPA is trying to quell the fear and panic the agency itself created..."
>
> "Mr. Reilly and the EPA have to pay a price for the irresponsible and unscientific way the agency handled this issue," the editorial says. And it is a loss of credibility. If they were so wrong about asbestos, how do we know they are right about radon, dioxin, and all the rest? The EPA won't regain its credibility until it bases its actions on a thorough review of sound science, not on emotions and suppositions."

The Ann Arbor paper's editorial is essentially the same. In a rebuttal in the Detroit paper, John J. Sweeney, President of the Service Employees International Union, takes issue with the paper's stand and with EPA's change in direction, saying:

> "It is distressing to us that in publishing its new guidelines document, the EPA seems to have capitulated to the asbestos manufacturers and real estate interests... We believe EPA will have done a great disservice by publishing its new guidance if building owners interpret the document as evidence that asbestos in buildings is not a hazard. The end result will be that school districts and other building owners will be saddled with the eventual cost of removal, and building service workers will suffer needlessly from asbestos disease."

The Washington Times on September 2, in an editorial reviewing the Casper, Wyoming, situation involving a long asbestos-related school closing, went through the various complaints and studies, then, hailed the impending release of the Green Book, which was also it's top-of-the-front-page lead article, headlines: "EPA warns against asbestos removal."

A few days earlier, in its August 30 issue, Science, published another article, "Counting on Science at EPA" on how "William Reilly is trying to give science a bigger role in EPA policy and wants to focus on the worst environmental problems, not just the most visible." The article never mentioned asbestos.

On November 12, 1990, the Legal Times published a story on the continuing confusion about asbestos, under the headline, "Agencies Send Mixed Signals on Asbestos." A subhead read: "New Policy Pronouncements from the EPA and OSHA on Asbestos May Discourage Removal but Still Treat the Substance as Hazardous.

The article deals at length with the Green Book and its emphasis on management in place, but also stresses at length OSHA emphases which apply to building-abatement projects as well as to other activities, and include notifying workers of the asbestos hazards they face on the job. Another subhead says, "Neither the EPA nor OSHA requires mandatory inspections or removals. For the near future, whether and when to inspect

and abate asbestos in commercial buildings will remain the decision of the building owners, as influenced by lenders, tenants, and other market forces."

Joseph Hooper, writing in the New York Times Magazine on November 25, 1990, reviewed the ongoing debate under the headline, "The Asbestos Mess--Now, some scientists say removing the fiber can be worse than leaving it." Hooper starts with Dr. Selikoff's early work on asbestos dangers, then turned to the New England Journal of Medicine article, saying:

> "the shock waves are still reverberating through the field... For the lay public, the controversy has provided a rare glimpse into the workings of American science, and the alliances--holy and unholy--it forms with government, labor and business.... Mainstream publications found Mossman's revisionist theory irresistible... The National Examiner, a supermarket tabloid, which announced its interpretation of the findings in a screaming headline: 'After spending billions taking it out of our schools, experts discover..ASBESTOS IS SAFE!'"

After a lengthy, balanced discussion of all the issues, Hooper hopefully concludes:

> "The polemics are the inevitable residue of the history of asbestos research in America. In its first phase, research was a tool used by industry to keep workers in the dark; later, when the workers acquired a powerful ally in Selikoff, it was a weapon with which to fight back. But today, it is no longer useful or accurate to divide asbestos researchers into saviors of labor or lackeys of industry. If Selikoff and his allies would drop the cudgels of class war, and if Mossman and the younger generation of scientists should, conversely, become shrewd about the political implications of their work, perhaps they could arrive at a scientific consensus that would provide a blueprint for the asbestos policy of the future."

In the early part of 1991, there have been a number of articles asbestos litigation, and the role of insurers. Generally, they emphasize the number of abatement firms forced into bankruptcy and the costs of both settlements and judgments. A typical one, in Forbes, on February 12, 1991, is entitled, "The Asbestos Monster: Will It Eat Your Company Next?"

Meanwhile, Asbestos Issues, in December, 1990, and February and March, 1991, published a number of articles of interest. One February article dealt with "An Inside Look at Asbestos Policies." It is by Joseph Schechter of the Technical Assistance Division, Environmental Assistance Division, OTS. What Schechter provides is an expanded version of the "Five Facts," the first time they have appeared in an external publication.

Another, in February, "Preservation Versus Removalism," deals with the shift in EPA policy "away from tacit encouragement of asbestos removal in favor of asbestos management:

> "Overall, building owners have greeted the emphasis with relief, but many of them are even now beginning to question the wisdom of asbestos preservation... According to the removalist view, removal is the only effective management option with long-term value. The benefits of preservation are short-term. Although removal admittedly is risky, these risks can be minimized and controlled through artful project design, close independent supervision....continuous monitoring.... Preservation carries severe liabilities of its own. If an owner commits to the goals of perservationism--elimination of existing contamination, prevention of exposure and future fiber release--in writing,

but the policies and procedures spelled out in the O and M Manual routinely are ignored by the building engineers, the responsibility for injury to the owner's employees can be traced back to the owner... Few property managers will adopt one philosophy to the exclusion of the other, but by understanding the polar extremes, an owner can be in the advantageous position of making a rational decision about what is best for their property."

Note: Three publications, Mealey's Litigation Reports (May 25, 1990), Asbestos Abatement (July/August, 1990), and Industrial Hygiene News, raise the issue of the role of the Safe Buildings Alliance as an asbestos manufacturing industry-created public relations effort. They attribute the spate of articles (including, by implication the New England Journal of Medicine article) in the general and trade press to the efforts of SBA's public relations agency.

IV. Influence of Parental/Community Pressures on Removal

While contractors, the National School Boards Association, many of the authors of the Science article and other articles which followed it, have expressed the belief that parental and community pressures were a major cause of LEAs removing asbestos from school buildings, the content analysis does not support this belief, nor does the AHERA study.

The AHERA study shows little parent reaction to being notified of asbestos in schools; The Hagler-Bially study likewise indicated such pressure had little impact on decisions to remove.

Early EPA efforts to enlist parents in an anti-asbestos effort do not appear to have been successful. (See Deputy Administrator Al Alm statement, EPA Journal, June, 1984, Update Section..)

These are findings that emerge from the content analysis. While there were numerous articles in educational publications, there was only one by Associate Superintendent Victor J. Ross of the Aurora, Colorado, school system (American School Board Journal, March 1985) that reflected intense parental pressure, and that involved the aftermath of a sloppy job by a removal contractor. The 1988 news clipping review also found only one example of major parental concern about asbestos, per se. Rather, strong parental concern related to school closings necessitated by asbestos removals and the transferring of their children to other schools. In instances where removal went on while school was in session, parents were offered the option of keeping their children at home; few--no more than 9 percent in any reported situation--did so.

Although PTAs were often said to have helped create nationwide panic, the one article on the subject in the national PTA magazine, PTA Today (Feb.1985) was highly responsible. The article promoted removal of asbestos in schools, but included appropriate EPA cautions on the subject. The recommended forms of activism were alerting officials to the presence of asbestos and related laws, and helping to raise money for abatement. The National participated in the development of the EPA publications, ABCs of Asbestos in Schools and Environmental Hazards in Your School.

Rather then being seen by LEAs as sources of pressure, the content analysis saw parents as targets for support for bond issues when community support was badly needed. Occasionally there is a reference in an article that indicates parents may have been pushing for something be done about asbestos and that is reflected in a school official

statement, "now the parents can be reassured, etc. The AHERA study reported that none of the parents who were focus group participants recalled reacting in any way when they received notification of asbestos in their children's schools.

One magazine, Forbes, in a January 8, 1990 story about the medical studies in the 1988 EPA report to the Congress, says:

> "Public hysteria about the asbestos threat had reached its zenith a year earlier, when Congress passed a law requiring every school board in the country to come up with a plan to deal with the potential asbestos health risk. 'Parents thought, we're going to have geniuses die at 35, we're going to play Russian roulette with our kids,' recalls Arnold Fege, chief lobbyist for the National Parents and Teachers Association, which heavily supported the asbestos law."

Because this statement attributed to a PTA official was so at odds with the findings of the content analysis and the AHERA study, Fege was asked if the quote was accurate. His answer: "No. What they printed was way out of the context of what I actually said. In fact, I wish there had been more hysteria out there when we were pushing for a stronger AHERA."

Appendix 3 (Survey & Interviews)
to Communicating About Risk: EPA and Asbestos in Schools

THE RELATIVE IMPORTANCE OF EPA INFORMATION IN SCHOOL ASBESTOS MANAGEMENT DECISION PROCESSES

Overview

This appendix presents the results of an internal EPA analysis of the relative importance of EPA information in school asbestos management decisions. The analysis was conducted as part of a larger study requested by EPA's Administrator, Bill Reilly, in the summer of 1990. At that time, meetings with school officials, interactions with Congressional representatives, and a series of press reports led the Administrator to be concerned that many school officials might misunderstand the requirements of EPA's AHERA program (mandated by the Asbestos Hazard Emergency Response Act of 1986). In particular, the Administrator worried that (1) many schools might be spending large sums of money removing asbestos which could be safely managed in place, and (2) school officials engaged in these "unnecessary" removal actions thought removal was an EPA requirement. To get to the bottom of the apparent problem, Mr. Reilly asked for a comprehensive internal review of communications in the asbestos-in-schools program. He wanted to know whether schools were making "informed" decisions about asbestos management, and whether there was a need to make EPA communications in the asbestos-in-schools program clearer and more consistent.

As part of this study, EPA analyzed how schools make asbestos management decisions, and how important information from EPA is to the schools decision-making process. This appendix presents the results of this analysis of the school decision process.

Before beginning, it should be noted that the perceived problem which initiated this study--the concern that there were high numbers of "unnecessary" removals of asbestos--is not as large as anticipated. The recently completed comprehensive evaluation of the AHERA program (insert cite) indicates that the current asbestos removal rate in schools is low (i.e., about 15% of all projects recommended in school systems' management plans) and that most removals are justified by the condition of the asbestos.. Interviews conducted with 10 state AHERA designees and 3 EPA Regional Asbestos Coordinators confirm that there have been removals of asbestos in good condition over time, but that the frequency of these removals is highly variable. In some states they have occurred in a large number of schools (e.g., Alabama), while other states report little such activity (e.g., Wyoming). In some states, the emphasis on removals appears to have decreased over time, with the highest rates occurring before or shortly after AHERA was passed.

A snapshot of this appendix

In this appendix, we "map" the LEA (local education agency) asbestos management decision process, identify dominant information sources, analyze the major factors influencing LEA decisions about asbestos, and explore the relative importance of information from EPA in those decisions. The findings in this appendix are based on:

1. In-depth interviews with 10 State AHERA designees and 3 EPA Regional Asbestos Coordinators;

2. A telephone survey of 40 LEA officials regarding the factors behind their choice of response actions;

3. Two reports prepared for EPA by outside contractors

   A. The Hagler Bailly study, a seven-state survey conducted in 1990 (An Evaluation of Three EPA Public School Risk Communication Programs: Asbestos, Lead in Drinking Water and Radon, 1990);

   B. The Jellinek study, a case study of 4 schools, conducted during the pre-AHERA period (Asbestos-Related Risk Communication Project: Final Project Report, Jellinek, Schwartz, Connolly & Freshman, Inc., 1987).

4. Interviews with EPA Headquarters staff.

SECTION I
OVERVIEW OF THE SCHOOL DECISION PROCESS

A. KEY STEPS IN THE PROCESS

Understanding the role of information in LEA (local education agency) decisions about asbestos management requires understanding the basic decision process which school systems follow. As the charts on the following pages (cite page #) illustrate, there are 12 basic steps in the asbestos management decision process. Most of these steps are shaped by the requirements stipulated by the AHERA rule. Information from EPA is important throughout this process, rather than being important at only one or two steps.

B. DIFFERENCES IN DECISION PROCESSES ACROSS SCHOOL SYSTEMS

1. The most marked differences in school decision processes occur between public and private schools.

The public school decision process tends to be more open, and involve many more individuals and information sources, than the private school decision process. School administrators, teachers, service workers, the school board, and parents all get involved in public school asbestos decisions to a greater degree than their counterparts in private school systems. In addition, the general public often gets involved in public school decisions if those decisions require a bond issue to acquire implementation funds. This kind of general public involvement is not seen in private schools.

Private school decision processes are more centralized, involve fewer people from both inside and outside the schools system, and as a result rely upon fewer external information sources. Private school administrations are typically smaller than those found in public schools, and the decision-making hierarchy is more collapsed (i.e., fewer decision-makers). The decision process tends to be closely controlled by school

administrators. Staff and parents generally are not involved, and board participation varies with the school.

There are, of course, exceptions to this pattern of centralization in private school systems, especially among sectarian schools. In sectarian schools, the organizational hierarchy of the church or diocese determines who the primary decision-maker for asbestos management is going to be. For example, in some dioceses, the central office makes the asbestos management decisions for all schools in its region. In other dioceses, the individual schools make their own decisions.

There is less parental and staff involvement in private school decision processes than in public schools. One of the major reasons for less parental involvement in private school decision processes is that these parents have deliberately entrusted private schools with their children's education. In so doing, they de facto entrust school administrators with their children's health. Parents with children in sectarian schools also may defer to school administrators, and be reticent to challenge them, because those administrators represent their religious leadership.

The reasons for less staff involvement in private school decisions parallel those for parents, but there are additional reasons as well. Unlike their public school counterparts, private school staff do not have the recourse of union protection. Teachers and service workers in both sectarian and non-sectarian private school systems may not feel that they are in a position to challenge their administrators. Also, in the case of small sectarian schools, service workers often are volunteers or part-time employees who are not in tune with asbestos issues and therefore are not active.

2. Involvement by staff and parents in both public and private school asbestos decision processes tends to be reactive and infrequent.

Type of involvement

While levels of staff and parental involvement are higher in public than private schools, in both forums this involvement tends to be in reaction to perceived problems with the school's original management decision. The problem, as defined by parents and staff, may be based on technical, economic, or political grounds.

Frequency of involvement

The conventional wisdom asserts that parents have played a key, and widespread, role in forcing schools to remove asbestos, regardless of the material's condition. However, this has been the exception rather than the rule. EPA did not find widespread evidence of parents forcing schools to remove asbestos under the AHERA program. The involvement of a handful of angry parents and staff can and has forced schools to make dramatic changes in their asbestos management decisions, but this happens relatively infrequently.

SECTION II
KEY FACTORS INFLUENCING SCHOOL DECISIONS ABOUT ASBESTOS MANAGEMENT

1. There are many factors which influence school decisions about asbestos rather than a single over-riding one. The most important factors (NOT in order of importance) are:

- o perceived legal requirements
- o long term accountability
- o perceived risk
- o level of internal expertise
- o reliance on multiple external information sources
- o concerns about the difficulty of implementing an O&M program
- o desire to be "asbestos free"

2. Perceived state and federal requirements are clearly one of the most important factors underlying school asbestos management decision.

We emphasize perceived requirements because school officials often cite state and federal rules as a major factor influencing asbestos management actions, regardless of whether or not those actions are in fact required by state or federal law. While the AHERA rule imposes many requirements on school officials, it does not mandate specific management actions. These actions must be made on a case-by-case basis and are up to the discretion of school administrators. Nonetheless, school officials often cite EPA requirements as the reason for their actions even when those actions are not dictated by the AHERA rule and are not supported by EPA guidance.

3. Other equally important factors include:

Accountability. In those cases where asbestos that is in good condition is removed, one of the primary reasons for removal appears to be school concerns about long term accountability. This includes concerns about possible enforcement actions, adverse parental reactions, liability, maintaining credibility with the local community, and related issues.

Perceived risk and the need to limit the exposure of children to hazardous asbestos fibers is clearly a primary factor in school decisions to remove asbestos which is in poor condition, or to undertake other management actions directly suited to the condition of the materials. It can also be a factor in other management actions, such as removals of asbestos in good condition.

Lack of internal expertise. While schools probably would prefer to rely on their trusted internal staff, these individuals rarely have sufficient expertise to permit

reliance on internal experts. The AHERA rule requires schools to use accredited personnel for different aspects of asbestos management (e.g., inspectors, management planners; see school decision process chart). It is rare for schools to be both willing and able to train their staff to fill all of these technically demanding roles. This combination of factors forces schools to go outside their staff to obtain technical advice on asbestos management, and makes it difficult for schools to evaluate the recommendations provided to them by outside experts. It also leaves school officials susceptible to inaccurate information or bad advice.

Reliance on multiple external information sources. While public schools tend to rely on more information sources than private schools do, both turn to sources outside the school system for information about asbestos risks and asbestos management. These information sources sometimes present conflicting or unclear advice, forcing schools to choose among them.

Concerns about the difficulty of implementing an O&M program. This includes concerns about having sufficient internal expertise to handle the program as well as concerns about its long-term cost and difficulty. If a school has insufficient internal expertise to tackle long term O&M, removal may seem like a reasonable and logical alternative.

Desire to be "asbestos free" and not have to worry about the problem anymore (i.e., peace of mind, certainty of no residual risk, choice of certainty over uncertainty). A school's primary mission is education, not hazardous waste management. While fulfilling the desire to be "asbestos free" may be expensive, it also frees a school system from the long term commitment of resources and staff to maintaining an adequate O&M program. Removal leaves school administrators with one less thing to worry about, one less thing diverting them from their primary mission.

3. Many of the above factors may lead to "informed" decisions about asbestos management, even when this entails removing asbestos which is in good condition.

The condition of asbestos clearly is not the only factor motivating school decisions about asbestos management. For many school officials, the desire for an asbestos-free school, and concerns about long-term accountability, become legitimate reasons for asbestos management actions which go beyond the measures required for long term protection of public health. Similarly, lack of internal expertise may make a one-time removal look like the most attractive option to a school official compared with the time and effort required to train staff to design and maintain a competent O&M program.

"Informed" is a highly judgmental word in this context and must be used carefully. As illustrated above, there are many legitimate reasons for removing asbestos that are unrelated to concerns about public health. To the extent that some removals occur for these reasons and not because of inaccurate information about EPA requirements, these decisions can be termed "informed."

4. When schools are already inclined to undertake removals because of some of the "value" factors described above, then the availability of funds becomes an important factor. Having funds available allows schools to carry through on their desire to have asbestos removed, including asbestos in good condition.

SECTION III
MAJOR INFORMATION SOURCES

Information about asbestos health risks and management options is an important "input" to the school decision process. In this section, we discuss the major information sources school officials are likely to rely upon.

A. WHAT THE SOURCES ARE

1. School officials tend to rely on multiple information sources rather than a single, primary source. The sources schools are most likely to turn to for information are:

- o State agencies (including but not limited to State AHERA designees)
- o EPA Regional Offices
- o Written documents from States and EPA
- o private consultants/contractors

2. States and EPA Regional Offices are two of the most trusted sources that school officials turn to for information about asbestos.

- o States and EPA Regional Offices are sources of both technical and general information. Both are consulted for written documents, verbal advice, and written advice.
- o The EPA Regional Offices appear to be the main source of information when school officials need advice on particularly complex technical questions or interpretations of regulatory requirements.
- o The degree of reliance on states for information varies with the quality and level of activity of the state program.
- o Written documents from state programs and EPA are critical information sources. These documents appear to be especially important when school systems are working to ensure compliance with regulatory requirements.

3. Outside consultants and contractors are another critically important information source

- o Schools rely heavily on outside consultants, but when school officials receive conflicting advice, they are more likely to turn to their State agency or Regional Office rather than their consultant to help them resolve the conflict.
- o EPA's survey of 40 schools indicated that 27 percent of the respondents obtained a second opinion on their consultant's recommendations. At first glance, this is a small percentage, but given the additional cost involved and the fact that EPA has not emphasized this option, this could be interpreted as a relatively significant percentage.

4. There are a number of secondary information sources. Their importance varies across school systems; in some cases, these will actually be primary information sources. These sources include school consortia; the media; professional associations; informal contacts with peers (e.g., fellow superintendents); trade associations; and trade journals.

5. Training courses and workshops can be expected to be an important source of information for those who participate in them. The quality of these training courses will determine their ultimate impact on the school decision process. Some shortcomings in these programs have been identified through the AHERA evaluation and a recent GAO study; EPA is in the process of taking steps to address the identified problems.

B. INFORMATION CHANNELS AND RECEIVERS

Sometimes, school officials obtain information directly from EPA. Other times, they obtain information about EPA requirements and recommendations through other sources. Those sources may pass the information on without altering it, or they may act as "filters", changing the message in subtle or dramatic ways.

Characteristics of message "receivers"

School officials are the major "receivers" of information that we are concerned about in this study. Some "receiver characteristics" may have a substantial impact on how school officials interpret information about asbestos and AHERA requirements, or whether they even get the information. For example:

Turnover. Some schools have a high turnover rate in the designated person (DP) position. When those schools do not make an effort to give the new DP all of the information already sent to the school regarding AHERA requirements and asbestos management options, a breakdown occurs in the information distribution efforts of EPA. High turnover rates can complicate EPA's efforts to get information to the school officials who need it.

Resistance to, and/or disagreement with, the EPA message. For a wide variety of reasons, some individuals may not agree with EPA's message about asbestos risks. Some people, because of personal characteristics and experience, may see higher risk, while others see lower risk, than EPA describes. Some may trust other information sources more than EPA, and those sources may be providing information which conflicts with EPA's main messages (see discussion about asbestos health risk controversy in main text). In any of these cases, people may resist information contrary to their initial beliefs. This will affect their asbestos management choices.

Characteristics of private schools. Some types of private schools may be harder to reach than public ones. For example, some of the very small sectarian schools appear to be among the least active in dealing with asbestos management. This low level of activity may stem from two factors, both of which may also be reflective of other private schools:

(1) they traditionally do not want government interference in their schools' management on any level for any reason;

(2) these schools are often very small and their resources are strained. Any non-educational expenditure can pose a major problem for them, making them resistent to undertaking costly asbestos inspections and abatement.

Characteristics of message channels

Some message channels are particularly important to the information exchange "system" which has evolved under AHERA. The messages provided over time by some of these sources are discussed in depth in other parts of this communications review. Here, we discuss two particularly important information channels: the media, and contractors.

The Media. The media is one of the public's primary sources of risk information. School officials, staff, and the parents of schoolchildren will rely on this source for some of their information about asbestos. This can lead to problems, since media coverage often over-simplifies complex risk issues. Media stories tend to characterize health risks in black and white terms (i.e., asbestos is "safe", or it is "unsafe"). Coverage follows the latest controversy, but does not always analyze the issues which underlie it, or the relative merit of each side's position. As a result, media coverage of asbestos issues may not always tell the full story, or may tell an incorrect story. For example, there have been many articles which incorrectly note that EPA requires removals under AHERA, or that most schools remove asbestos (see content analysis appendix for more information on this point).

Contractors. Contractors are a very important information source for many school systems. The accuracy of the information contractors provide thus is extremely important both to school officials and to EPA. Distortion is possible at this information exchange level if conflict-of-interest has not been addressed or the contractor's professional credentials are inadequate. The interviews conducted for this study suggest that some school officials have obtained inaccurate information and "bad advice" from contractors; the AHERA evaluation suggests that this is not as widespread a problem as was originally thought.

SECTION IV
RELATIVE IMPORTANCE OF EPA INFORMATION

1. There is wide variation in people's perceptions of the consistency and clarity of EPA's message over time regarding requirements under the asbestos-in-schools program. In instances where EPA's message is perceived as either inconsistent or unclear, the influence of EPA information may be adversely affected.

Perceived clarity

EPA's interviews with State AHERA designees and Regional Asbestos Coordinators (RACs) showed marked variation in people's perceptions of whether or not EPA's message about asbestos-in-schools has been clear. Some respondents felt that the message has been clear only under AHERA and/or only in the past year in response to the issues raised by recent scientific articles (e.g., the Mossman, et al., article in the January issue of Science). Others held a directly opposing view, saying that the message has been clear over time, not just since AHERA.

Respondents to Hagler-Bailly's seven-state survey gave EPA materials reasonably high ratings, but ones which clearly showed the possibility for improvement (on a scale of 1 to 5, where 5 is "very clear" and 1 is "not clear," EPA materials consistently were rated between 3.4 and 3.9).

Perceived consistency

Respondents to EPA's AHERA designee/RAC interviews were evenly divided on the consistency question as well. Half felt EPA's message had been consistent over time (i.e. from the Orange Book, which was released three years before the inspection and notification rule, through to the present). Half felt that the message had been consistent only under AHERA.

The mixed responses regarding whether or not EPA's message has been consistent over time may reflect incremental but marked changes in program scope and requirements. The scope and emphasis of the asbestos-in-schools program has shifted over time, expanding the universe of types of asbestos included, and shifting from technical assistance to inspections and notification and finally to mandated management plans.

2. EPA information clearly exerts an influence on school asbestos management decisions, but it competes with many other factors. In some instances, these factors may overshadow the influence of information from EPA. Information from EPA can be designed to more clearly explain AHERA requirements and recommendations, but information alone cannot assuage concerns about liability, change the value-based desire to have an asbestos-free school, or improve an LEA's ability to conduct O&M programs.

3. Regardless of how well EPA improves the quality of its informational materials, the quality of information given to school officials from other sources not under EPA's control will remain a limiting factor. School officials rely on multiple information sources. There are many opportunities for messages to become distorted, confused, or contradictory. EPA can adopt a policy of carefully tracking major information sources and responding to inaccurate information as it is found, but the scope of sources involved will make it difficult to do this for all sources.

EPA's Main Asbestos Messages Today

For the purposes of clarity and simplicity, it may serve us to illustrate what EPA's messages about asbestos control in buildings are today. They are contained in what EPA has called the "Five Facts about Asbestos:"

1: Although asbestos is hazardous, human risk of asbestos disease depends upon exposure.

Asbestos is known to cause cancer and other disease if asbestos fibers are inhaled into the lung and remain there. This conclusion is based upon studies involving human exposure, particularly exposure at high levels. While evidence is better for some types of asbestos, there is no clear proof that other types are not as hazardous. EPA, based on careful evaluation of available scientific evidence, has adopted a prudent approach in its regulations of assuming that all fibers are of equal concern. Although a recent Science magazine article indicated exposure to chrysotile (common white asbestos) may be less likely to cause some asbestos-related diseases, various scientific organizations, including the National Academy of Sciences, support EPA's more prudent regulatory approach.

With respect to the so-called "one fiber can kill" image, the present scientific evidence will not allow EPA to state unequivocally that there is a level of exposure below which there is a zero risk, but the risk in fact could be negligible or even zero.

Moreover, the mere presence of a hazardous substance, such as asbestos on an auditorium ceiling, no more implies disease than a potential poison in a medicine cabinet or under a sink implies poisoning. Asbestos fibers must be released from the material in which they are contained, and an individual must breathe those fibers in order to incur any chance of disease.

While scientists have been unable to agree on a level of asbestos exposure at which we, as public policy makers, can confidently say, "there is no risk," this does not mean that all or any exposure is inherently dangerous. To the contrary, almost every day we are exposed to some level of asbestos fibers in buildings or in the outdoor air. Based upon available data, very few among us, given existing regulatory controls, have contracted or will ever contract an asbestos-related disease from these relatively low levels of airborne fibers.

2: Prevailing asbestos levels in buildings -- the level that you and I face as office workers or occupants -- seem to be very low, based upon available data. Accordingly, the health risk to building occupants -- you and me -- also appears to be very low.

Indeed, a 1987 EPA study found that airborne fiber levels in a segment of Federal buildings with asbestos management programs were so low as to be virtually indistinguishable from levels outside these buildings. While these data are not conclusive and we are seeking more information through a major research effort, the present evidence suggests that building occupants face only a very slight risk. Severe health problems attributed to asbestos exposure have generally been experienced by workers in industries such as shipbuilding, where they were constantly exposed to very high fiber levels in the air, often without any of the worker protections now afforded to them under the laws.

3: Removal is often <u>not</u> a building owner's best course of action to reduce asbestos exposure.

In fact, an improper removal can create a dangerous situation where not previously existed. It is important for everyone to understand that EPA asbestos regulations for schools under the Asbestos Hazard Emergency Response Act (AHERA) do <u>not</u> require removal of asbestos.

Although we believe most asbestos removals are being conducted properly, asbestos removal practices by their very design disturb the material and significantly elevate airborne fiber levels. Unless all safeguards are properly applied and strictly followed, exposure in the building can rise, perhaps to levels where we know disease can occur. Consequently, an ill-conceived or poorly conducted removal project can actually <u>increase</u> rather than eliminate risk.

4: EPA only requires asbestos removal in order to prevent significant public exposure to asbestos during building renovation or demolition.

Prior to a major renovation or demolition, asbestos material that is likely to be disturbed or damaged to the extent that significant amounts of asbestos would be released must be removed using approved practices under EPA's asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP). Demolishing a building filled with asbestos, for example, would likely result in significantly increased exposure and could create an imminent hazard. Clearly, asbestos removal before the wrecking ball swings into action is appropriate to protect public health. However, this cannot be said of arbitrary asbestos removal projects, which, as noted above, can actually increase health risk unless properly

performed. This, in part, is why EPA has not mandated asbestos removal from buildings beyond the NESHAP requirement, which has the effect of gradually and rationally taking all remaining asbestos building materials out of the inventory.

5: EPA does recommend in-place management whenever asbestos is discovered.

Instead of removal, a **pro-active in-place management program** will usually control fiber releases, particularly when the materials are not significantly damaged and are not likely to be disturbed.

In-place management, of course, does not mean "do nothing." It means, first, that the building owner or manager should identify asbestos, through a building-wide inventory or on a case-by-case basis before suspect materials are disturbed by renovations or other actions.

After the material is identified, the building owner or manager can then institute controls to ensure that the day-to-day management of the building is carried out in a manner that minimizes the release of asbestos fibers into the air and ensures that when asbestos fibers are released, either accidentally or intentionally, proper control and cleanup procedures are implemented.

Another concern of EPA and other federal, State and local agencies which regulate asbestos is to ensure proper worker training and protection. Maintenance and service workers in buildings, in the course of their daily activities, may disturb materials and can thereby elevate asbestos fiber levels, especially for themselves, if they are not properly trained and protected. For these persons, risk may be significantly higher. Proper worker training and protection, as part of an active in-place management program, can reduce any unnecessary asbestos exposure for these workers and others.

In addition to these steps outlined above, an in-place management program will usually include notification of workers and occupants, periodic surveillance of the material, and proper record keeping. While the management costs of all the above activities will depend upon the amount, condition, and location of the material, such a program does not have to be extraordinarily expensive. In sum, an in-place management program may be all that is necessary to control the release of asbestos fibers, until the asbestos-containing material in a building is scheduled to be disturbed by renovation or demolition activities.

Asbestos and its Uses

Asbestos has been around for many centuries. The Romans wove asbestos into tablecloths that could be tossed into the fire for cleaning; Marco Polo described the amazing textile in his writings. In the twentieth century, we have seen a substantial exploitation of asbestos in commercial products because of its high tensile strength and resistance to fire, heat and corrosion.
Asbestos commonly refers to six distinct types of silicate minerals, and this leads to some of the controversy surrounding the subject today. One of these, chrysotile, belongs to the serpentine family, meaning that its fibers are curly and pliable; it curls upon itself and grows to form long hollow tubes. The other types, known as amphiboles, all have needle-like fibers.

Most asbestos is mined in Canada, the Soviet Union and South Africa. Imports of asbestos into the United States in 1985 totaled about 85,000 metric tons. In 1973, however, use of asbestos in the United States had reached 800,000 metric tons, attesting to the popularity of the mineral and its characteristics--especially for the building trade. In schools and other buildings, asbestos can be found most commonly in spray-applied fireproofing, pipe and boiler insulation, acoustical and decorative insulation and floor and ceiling tile.

About 95 percent of the asbestos being produced today is chrysotile, or the "white" curly asbestos. Most asbestos used in building products and materials is chrysotile asbestos.

Asbestos: Science & Controversy

Asbestos fibers, microscopic in size and very lightweight, can remain in the air for many hours if released from asbestos and asbestos-containing-materials or products. Friable asbestos products (those than can be reduced to powder when crumbled by hand) are most likely to release fibers into the air.

When asbestos fibers are inhaled, they can disrupt the functioning of the lungs. In the 1960s, concerns about asbestos hazards centered on workers who had been exposed to large amounts of fibers in their jobs. Epidemiological studies by Selikoff of Mount Sinai School of Medicine and Hammond of the American Cancer Society showed that insulation workers who had dealt with asbestos for many years were dying of cancer and the complications of asbestosis at alarming rates. In addition, inhalation of asbestos fibers were also linked to mesothelioma and lung cancer, and asbestos tile weavers and shipyard workers were other occupations which showed significant relationships between high exposure levels and disease.

These studies created a shock wave of concern about asbestos in the United States. Legislators, public health officials, product manufacturers,

insurers, bankers, concerned parents and government regulators all began to examine the exposure and effects of this product that was so well known and so popular a part of our consumer culture. In recent years, the shock wave has been carried forward by the momentum of over 115,000 pending personal injury lawsuits.

As disturbing to many, were the revelations in the 1980s of a widespread conspiracy by corporate scientists and officials over several decades to suppress health effects found in workers in the asbestos mining and manufacturing industries. These revelations documented a long-term effort to conceal evidence of the harmful effects of high-level exposure to asbestos fibers. This contributed a great deal to polarize antagonism between asbestos businesses and labor unions. In retrospect, it becomes apparent that the very research initially used by industry to keep workers in the dark, later offered these same workers a powerful ally in Selikoff and a weapon with which to fight back.

In the late 1980s, however, the controversy took another turn. In December 1988, a symposium was held at Harvard which reviewed existing medical literature and concluded that asbestos in buildings poses very small risks to occupants. It criticized EPA's asbestos policies and emphasized that the general public has "fiber phobia" concerning asbestos. The symposium was sponsored by the National Association of Realtors, the Safe Buildings Alliance, the Urban Land Institute and the Institute of Real Estate Management. The report from the Harvard Symposium was released in August 1989.

In June 1989, an article appeared in the New England Journal of Medicine which reviewed existing medical literature on the health effects of asbestos exposure and concluded that health risks from non-occupational exposure to asbestos in buildings are small. The article was written by Mossman, an associate professor of pathology at the University of Vermont, and Gee, a professor of pulmonary medicine at Yale University. This marked the first major public shift in thinking about asbestos hazards.

The authors argued that the needle-like amphibole types of asbestos, which are relatively rare, have been demonstrated to have the most serious health effects. They suggested that amphiboles are a more important cause of lung cancer and mesothelioma, a rare, fatal cancer of the abdominal lining and other organs. Curly chrysotile asbestos, on the other hand, which accounts for 95 percent of the world's production of asbestos, has been shown to be far less of a health threat, the authors argued.

The article criticized current regulations for failing to make distinctions among the health threats posed by different types of asbestos. The authors said current policies also fail to take into account fiber sizes, levels of respirability, and different airborne concentrations of fibers. Mossman and Gee leveled a general attack on efforts to remove asbestos materials from buildings, arguing that epidemiological data and risk estimates fail to justify the "unprecedented expenses on the order of $100 billion to $150 billion that could result from asbestos abatement."

In January 1990, Science magazine, the journal of the American Association for the Advancement of Science, published an article written by Mossman, Gee, et. al, that also reviewed existing medical literature and was again critical of EPA's asbestos policies. The article indicated exposure to chrysotile (the common curly asbestos) may be less likely to cause some cancer-related diseases. It commented on the "asbestos panic" in the United States.

Lest the debate become one-sided, The Collegium Ramazzini, an international organization of professionals concerned with occupational health, held a three-day conference in June 1990 in New York City entitled, "The Third Wave of Asbestos Disease: Exposure to Asbestos In Place." Asbestos experts including Selikoff and Landrigan of the Mount Sinai School of Medicine in New York addressed the participants on the "third wave" of disease affecting maintenance, custodial and abatement workers.

Major Legislative Asbestos Activity

With the passage of the Occupational Safety and Health Act and the Clean Air Act, both in 1970, Congress directed the federal government to spearhead the drive to reduce exposure to asbestos. Much of the impetus to take action came from the pioneering epidemiological work by Selikoff and Hammond.

1976: The passage of the Toxic Substances Control Act (TSCA) gave the EPA new powers to move against public health hazards. With regard to asbestos, however, little was known about actual exposure levels. Monitoring for asbestos fibers was an inexact science unless the levels were very high. Abatement procedures, short of actual removal were untested. Few persons were trained in asbestos inspections and abatement procedures. A great deal needed to be done in order to address the asbestos situation in an estimated one million buildings in the United States.

1984: The Asbestos School Hazard Abatement Act (ASHAA) mandated EPA to carry out a substantial loan and grant program for public and private schools. Funds were to be awarded on the basis of two Congressional criteria: financial need and the severity of the asbestos hazard.

1986: With the passage of the Asbestos Hazard Emergency Response Act (AHERA), Public Law 99-519, Congress set significant new requirements and deadlines in dealing with asbestos in schools. Without debate in the hearings held in the summer of 1986, the law passed by unanimous voice vote in Congress and reflected a new urgency on the part of Congress to protect school children and avert future charges

that Congress or EPA may not be taking its public health responsibilities seriously enough. The new law required EPA to develop regulations for school inspections and management plans within one year of passage and to develop a model plan within six months to accredit inspectors, planners, workers and contractors. It also directed EPA to report to Congress within three years about asbestos in public and commercial buildings, including an assessment of the extent of the problem; how workers and the public are affected; and whether a program similar to AHERA should be implemented in buildings other than schools.

1990: The Asbestos School Hazard Abatement Reauthorization Act (ASHARA) was enacted to reauthorize the loan and grant program under ASHAA by authorizing $200 million annually through 1995.

EPA's Asbestos Regulatory and Enforcement History

1971: EPA listed asbestos for regulation under its new National Emission Standards for Hazardous Air Pollutants (NESHAP), contained in the 1970 Clean Air Act.

1973: EPA finalized its first asbestos regulations, under NESHAP, requiring all asbestos to be removed from buildings before demolition or renovation to avoid widespread, uncontrolled release into the ambient air. It also required notification of asbestos removals; and certain work-practice standards such as wetting and encapsulating the asbestos during removal. In addition, the rules banned spray-applied asbestos for most friable materials (acoustical, fire-proofing, thermal insulation) and established a "no visible emissions" standard for milling, manufacturing and demolition of asbestos.

1970s: Throughout the 1970s and 1980s, EPA frequently enforced the demolition and renovation regulations with great fanfare. Studies showed that the airborne fibers released in an improper demolition or renovation placed the public as well as the workers at significant risk. Not only were the fibers kicked up during this activity plentiful, but they traveled great distances and stayed in the outdoor air for considerable periods. One of the most effective ways of reducing public exposure to asbestos fibers was to enforce the demolition and renovation rules. Numerous attempts were made to publicize violations and penalties, including a major press conference as recently as August, 1989 when heavy fines were levied on several school districts and asbestos companies failing to notify authorities of an asbestos removal and other improper procedures.

1979: EPA initiated a regionally-based technical assistance and outreach program. Through placing full-time Regional Asbestos Coordinators in EPA's 10 regional cities (Boston, New York, Philadelphia, Atlanta, Chicago, etc.), the Agency sought to develop and distribute technical guidance to improve the quality of asbestos identification, assessment and abatement activities and to promote a better understanding of asbestos risks.

1982: EPA issued its first set of asbestos regulatory requirements since the NESHAP rules almost ten years earlier. Under the new Toxic Substances Control Act, EPA issued an asbestos inspection and notification rule which required all public and private local education agencies to inspect buildings for the presence of friable asbestos; post warning signs in maintenance and common areas; and to notify parents, teachers and other building occupants of the presence of friable asbestos. The rules did not require the schools to remove or repair it, only to inspect and notify.

1980s: Between this 1982 rule and the AHERA legislation of 1986 which superceded it, EPA conducted major enforcement activities to penalize schools violating the inspection and notification rule. The Agency, as a matter of course over this period, frequently reduced penalties for violations of the inspection and notification rule in exchange for violators' commitments to remove asbestos.

1984: Under the technical assistance program, EPA was continuing its research on asbestos levels and effective abatement procedures. A national survey of buildings was completed in 1984, with the results showing indoor levels usually as low as outdoor levels.

1985: EPA began awarding about $50 million in loans and grants under ASHAA. Between 1985 and the present, the Agency has distributed over $296 million in loans and grants to 1,125 local education agencies to perform over 2,600 asbestos abatement projects in 1,900 schools. EPA estimates over 21 million weekly-exposure-hours have been eliminated as a result of these projects. Because of the statutory criteria, only the most seriously damaged friable materials were funded for abatement. The projects were almost always removal actions. EPA conducted the first phase of its research into assessing the efficacy of removal techniques.

A network of self-sustaining university asbestos information and training centers was also being established, with the naming of the first two of five national centers.

As importantly, the infrastructure of state asbestos

programs was being developed with EPA assistance. Through grants and technical assistance, EPA was encouraging state sufficiency in contractor certification and accreditation programs. During the three-year period 1985-87, EPA awarded $2.5 million to 39 states for asbestos contractor certification programs.

1987: With the passage of AHERA in 1986, EPA began the task of implementing a major new regulatory program under considerable time and knowledge constraints. Bringing together parties to the asbestos issue--health officials, business and industry interests, maintenance and custodial worker unions, school officials--EPA published the new model plan less than five months after passage of the law.

EPA issued its new asbestos-in-schools regulations in October, just one year after passage of AHERA--an almost impossible feat in the open and participatory rulemaking process used at EPA.

EPA continued its technical assistance program by developing a fee-based system with the National Conference of State Legislatures for state asbestos support activities.

1988: EPA issued $1 million in grants to 17 states for AHERA inspector accreditation programs. The number of states with asbestos program was growing rapidly. From four states in 1985, the number rose to 47 by 1990.

EPA issued its 1988 Report to Congress on Public and Commercial Buildings outlining its knowledge about asbestos hazards and recommended Congress refrain from new legislation establishing AHERA-like requirements for as many as 700,000 public and commercial buildings besides schools estimated to contain asbestos. The Agency requested a three year period before reporting back with its recommendations.

1989: EPA concluded more than a decade of examining asbestos risks in society by issuing a rule under the Toxic Substances Control Act by banning asbestos manufacture, import and commercial distribution in three phases over a seven-year phase-out period.

The rule had a long history of development. After the Consumer Product Safety Commission banned many asbestos-containing consumer products in

1978, EPA moved to consider regulation of commercial uses of asbestos. It issued an advance notice of rulemaking in 1979 and a reporting rule in 1982 to collect information on industrial and commercial uses of asbestos. In 1986 and 1988, EPA proposed an asbestos ban under several options for further comment and additional information collection.

Finally, in July 1989, the Agency promulgated its ban and phase-out rules. They effectively banned an estimated 94 percent of all remaining asbestos-containing product manufacture, import and commercial distribution through three phases. In 1990, felt products, including pipeline wrap and roofing/flooring felt, cement sheet products, floor tile and clothing containing asbestos could no longer be manufactured. Acceptable substitutes were readily available. In 1993, the ban extended to some friction products, such as clutch and transmission components and gaskets. (Beginning with the 1994 model year, automobiles and trucks will no longer contain asbestos materials in brake, clutch and transmission parts.) In 1996, the final phase is implemented. The ban extends to the manufacture and import of coatings, remaining friction products, paper products and cement pipe and shingles. Bans on distribution occur one year later.

In announcing the ban and phase-out, EPA Administrator William Reilly said, "This is pollution prevention. We're eliminating a known cancer-causing substance from the marketplace."

EPA's Asbestos-in-Schools Requirements

With the passage of the Asbestos Hazard Emergency Abatement Act of 1986 (AHERA), EPA was required to implement a major new regulatory program shortly after the law's passage. In October, 1987 EPA issued its new final rules which now started the process of compliance with the burden of the term "Hazard," found in AHERA's title, placed on the shoulders of local education agencies (LEAs) by Congress.

Within 12 months, every local education agency, from large public school district to small private schools, had to select and train a designated asbestos person--either an employee or contractor--to oversee the AHERA program in their school.

Next, an AHERA-accredited inspector had to conduct an initial

inspection of all buildings within the school for friable and non-friable asbestos and assess the condition of all asbestos materials. In most cases, schools chose from the rapidly growing list of contractors that had completed training in an EPA-accredited course for inspectors. The rush was on to fulfill the immense need for qualified people to handle the thousands of inspections required for almost 200,000 schools across the United States.

Upon completion of the inspection, an AHERA-accredited management planner must recommend to the local education agency appropriate steps to control asbestos and develop a management plan. Large and small companies alike vied for a share of the lucrative market for developing asbestos management plans.

Several other requirements were levied upon local education agencies by EPA's negotiated rules. Training of all maintenance and custodial workers in buildings with asbestos had to be accomplished. Warning signs had to be posted in all maintenance areas where asbestos was present.

Parents, teachers and employees were required to be notified by the local education agency about the availability of the asbestos management plan.

Where asbestos was present and damaged, surveillance activities were required every six months to monitor the condition of the asbestos. Reinspection by an AHERA-accredited inspector had to be accomplished every three years, as long as asbestos and asbestos-containing building materials were present in the schools.

Under statutory deadlines, all of these activities had to be accomplished by October 1988--within one year of publishing EPA's asbestos-in-schools rules.

School officials were required by statute to implement management plans by July 1989 (nine months later), using only AHERA-accredited professionals to conduct any response actions other than operations and maintenance activities..

AHERA Outreach and Communications to Schools

The Asbestos Hazard Emergency Response Act (AHERA) school rule was promulgated in October 1987, within a year of enactment (October 1986). The proposed rule was developed through a regulatory negotiation with interested groups, including a wide variety of school organizations. Schools, under the law, had only a year, until October 1988, to conduct their

inspections and develop management plans. The Agency conducted many activities during this period to help them comply, many of which are listed below. (Those marked with an asterisk [*] are of particular note.)

The Agency:

* Mailed the new AHERA school rule, with explanatory preamble, directly to all public school districts and private schools. (October 1987)

o Provided $5 million in grants to 12 States, under a new Asbestos Inspection and Management Plan Assistance Program (AIMPAP), for programs which provide funds to schools for AHERA inspections and management plans. (October 1987)

o Produced a listing of EPA-approved university and private training programs for asbestos inspectors and management planners, also mailed to all schools. (October 1987)

o Began a series of national speaking opportunities, including those for the National School Boards Association (NSBA), the American Association of School Administrators (AASA), and the National PTA, as well as professional groups, such as the National Asbestos Council (NAC). In addition, the EPA Regional offices addressed various state and local school groups across the country. (Throughout the period)

o Authored, or worked with school groups to produce, a series of articles on AHERA. This included a NSBA advisory and a feature article in Education Week. (Throughout the period)

o Granted approvals to nine State accreditation programs, so inspectors and management planners could be trained and accredited by their states as well as by EPA-approved private trainers. (Throughout the period)

* Funded and co-hosted, with the National Conference of State Legislatures (NCSL), a special national meeting on AHERA policy, attended by officials representing more than 30 States. (November 1987)

o Established a clearinghouse for EPA-developed model training courses for asbestos inspectors, management planners and abatement supervisors, available to school officials and others at cost. All schools were advised of this service. (November 1987)

- Developed and mailed to all schools a one-page alert of "immediately enforceable" AHERA provisions, to encourage rapid school compliance. (December 1987)

- Provided asbestos program grants totalling $1.1 million to 17 States for various accreditation programs. (December 1987)

- Developed, with NCSL, a comprehensive list of State asbestos program activities and contacts, which was made available to schools. It included dozens of training organizations nationwide which EPA was screening and auditing. (January 1988)

- Developed and mailed to all schools an easy-to-read booklet, known as the "LEA Guide," describing the new rule to schools officials, including checklists and reference materials available from EPA. (February 1988)

- Produced a revised listing of EPA-approved training providers, as well as approved State programs, and mailed it directly to all schools. (February 1988)

- Developed, in conjunction with AASA and NAC, a two-hour awareness video describing AHERA requirements, particularly in-place management of asbestos. It was made available by AASA and NAC to all schools. (March 1988)

- Hosted a 90-minute national tele-conference, broadcast by satellite and live over many of the nation's public and educational TV stations, describing AHERA requirements and allowing school officials to call in with questions. Three separate mailings, providing various AHERA materials, were sent directly to all schools. Tapes were made available for replay to both public TV stations and schools. (April 1988)

- Provided an additional $11.8 million in grants to 14 States, under a second AIMPAP allocation, for programs which provide funds to schools for AHERA inspections and management plans. (April 1988)

- Appointed and advised all schools of the new AHERA ombudsman office in EPA, which includes a toll-free line to address school questions and concerns. (April 1988)

- Developed and mailed to all schools a new guide to the 100 most frequently asked questions about the schools rule, known as the "100 Questions." The guide, accompanied by an update of various other AHERA activities, addressed the key 100 policy issues raised by schools since the rule was published. (May 1988)

- o Provided an additional $3.2 million in grants to five states, under a third AIMPAP allocation, for programs which provide funds to schools for AHERA inspections and management plans. (May 1988)

- * Developed and conducted, with the assistance of state officials from Maryland and Connecticut, training for state officials designated by AHERA to review school management plans. Several hundred people from nearly all states attended six meetings nationwide. Materials, including a comprehensive inspection and management plan checklist, were provided to all State officials, regardless of attendance. (July 1988)

Congress, in July 1988, passed a law allowing schools until July 1989, instead of the original October 1988 deadline, to complete their inspections and management plans.

- * Advised all schools of the new AHERA extension law, and provided an update on AHERA activities. The mailing also included a comprehensive management plan checklist, developed as part of the state training program to help school officials check the work of their contractors. (August 1988)

- o Published a third listing of accredited State programs and approved AHERA training providers. (August 1988)

These activities were accomplished before the original AHERA compliance deadline of October 1987, and well before the July 1989 extension.

Further, the Agency's school asbestos efforts also included during this period:

- o Its fourth loan and grant program under the Asbestos School Hazard Abatement Act (ASHAA), which screened hundreds of applications in early 1988 and awarded $22.6 million to 103 schools for 226 individual abatement projects in April 1988.

- o An interim report to Congress on financial assurance for schools and asbestos abatement contractors conducting hazard abatement activities in their buildings, issued in August 1988.

Unfortunately, the Agency was not able to produce all the AHERA implementation materials it intended on schedule. For example, EPA's ABC's of Asbestos in Schools booklet, produced jointly with the National PTA and the National Education Association (NEA), did not appear until June 1989 -- a month before the extension's compliance deadline.

At the AHERA deadline of July 1989, the States and EPA estimated that 94 percent of all public school districts and private schools had conducted their initial AHERA inspections and developed asbestos management plans. While the Agency has discovered deficiencies in many of these plans through its AHERA evaluation, schools were nevertheless able to get a firm foothold on their asbestos problems. Further, the AHERA evaluation does seem to suggest that most schools did get a primary message -- that most asbestos could be managed successfully in place, in that in-place management was by far the preferred approach to dealing with most asbestos material.

EPA's 1988 Report to Congress

The 1988 Report to Congress on Asbestos in Public and Commercial Buildings, called for in AHERA, was supposed to characterize the nature of asbestos hazards in buildings and considered public policy approaches to address them. EPA, however, was not prepared to meet this Congressional deadline. The Agency presented its Report to Congress in February 1988 containing several important elements of information and asked Congress for additional time to assess and improve the quality of the nation's asbestos-related activities.

First, EPA estimated that friable asbestos is present in about 44,000 school buildings and another 20 percent of the nation's 3.6 million public and commercial buildings--about 700,000 more buildings. Secondly, the Agency did not recommend proposing a comprehensive rule for asbestos in public and commercial buildings, asking instead for three years to examine what had been accomplished and what remains.

EPA estimated that full compliance with AHERA would cost approximately $3 billion over 30 years. It cautioned that a new regulatory program modeled after AHERA would cost in excess of $50 billion. Other organizations have estimated this figure to be as high as $150 billion.

The Agency recommended that it would take several steps in the three years before it reported back to Congress with its recommendation on what to do about other public and commercial buildings.

First, EPA would move even further to enhance the nation's technical capability in asbestos management and abatement. It would do this by increasing the number of professionals qualified to perform asbestos tasks; and it would help building owners better select and apply asbestos management and abatement actions in their buildings.

To carry out this first step, by April 1991, EPA had approved 1,300 AHERA accreditation training courses, 550 laboratories for asbestos analysis, and 29 state accreditation programs. It had provided states with model accreditation legislation; distributed over $5 million to states to enhance certification and accreditation programs; and completed development of an in-place management guide for public and commercial building owners. In addition, EPA completed development of an asbestos management kit for federal building managers.

The second step to which EPA committed itself was to focus attention on Thermal System Insulation (TSI) asbestos, the most common form of asbestos likely to be damaged and therefore contribute to potentially dangerous exposure. The Agency consolidated its knowledge about the presence of Thermal System Insulation asbestos in the nation's buildings through a re-analysis of data collected during its 1984 survey of asbestos levels in public and commercial buildings. EPA also began developing guidance and instructional materials on TSI repair and abatement techniques.

Step three was to improve the integration of activities to reduce imminent hazards, including improved coordination among federal, state and local agencies responsible for implementing asbestos programs and policies as well as enhancing EPA's enforcement capabilities. The Agency sponsored the Federal Asbestos Task Force, a working group of officials from federal agencies with asbestos program responsibilities. In late 1990, EPA issued a revision of the asbestos NESHAP rule which enhanced the enforcement and compliance provisions in the standard concerning demolition and renovation. A second revision is also planned.

The final step in preparing for the future report to Congress was to objectively assess the effectiveness of the AHERA schools rule and other current activities to determine its effectiveness and the appropriateness of this approach for other public and commercial buildings. The Agency was committed to filling gaps which limited its ability to make regulatory decisions about asbestos in public and commercial buildings.

To accomplish this fourth step, EPA undertook several activities. It began a series of studies called the AHERA Evaluation Project to evaluate the effectiveness of AHERA for schools and the efficacy of a similar type of regulation for other public and commercial buildings.

EPA's principal effort to learn more about asbestos exposure levels in buildings centers around a joint public-private research project now being conducted under the auspices of the Health Effects Institute. The Health Effects Institute-Asbestos Research project (HEI-AR) will complete a systematic literature

review in 1991 and will then examine other research projects over the next 3-5 years, based on gaps found in the literature review.

The Agency has continued its own research efforts, completing a study of asbestos levels in the air in federal buildings in 1988.

Lastly, EPA decided that a policy dialogue with all affected parties would assist in clarifying the desires and concerns about asbestos in public and commercial buildings. To help determine the most appropriate programmatic or regulatory action, the Agency held a series of public sessions with building owners and managers, labor unions, federal, state and local government program managers, asbestos abatement and control professionals, former and current manufacturers of asbestos products, mortgage bankers, insurers and realty organizations.

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# # #

STEP 1

Appoint LEA Designated Person

Why: AHERA requirement

Primary Decision-maker(s): Superintendent and/or School Board

What Happens:

The local education agency (LEA) appoints an EPA accredited AHERA designated person (DP). The DP oversees the initial inspection and management plan development, implementation of any operation and management (O&M), posting of warning labels, and any other necessary response actions.

Typically, the DP is appointed from within the LEA staff, and may come from anywhere within the LEA administration hierarchy depending on LEA staff distribution, staff size, and the management style of the top administrators. In some instances, private or public schools will form consortiums and then hire a private consultant as their DP.

STEP 2

Appoint Inspector

Why: AHERA requirement

Primary Decision-maker: Designated Person (DP)

What Happens:

An EPA accredited inspector is appointed from within the LEA's staff or is contracted from outside the LEA. Often the inspector is an external person; but some LEAs have an internal staff member trained as an inspector. The in-house person trained often comes from the LEA maintenance/custodial personnel, because of this person's knowledge of the buildings.

STEP 3

Conduct Inspections

Why: AHERA requirement

Primary Decision-maker: Inspector

What Happens:

All buildings used and owned by the LEA get inspected for Asbestos Containing Materials (ACM). The inspector takes samples of the suspected ACM and documents location and condition.

...IF ASBESTOS IS NOT IDENTIFIED, THEN THE PROCESS STOPS HERE.

...IF ASBESTOS IS IDENTIFIED, THEN THE LEA PROCEEDS TO STEP 4.

(If asbestos is identified...)

STEP 4

Appoint Management Planner

Why: AHERA requirement

Primary Decision-maker(s): DP and Superintendent and/or School Board

What Happens:

An EPA accredited management planner (MP) is appointed to review the inspection results and to make recommendations for asbestos management.

The LEA administration often appoints an external person, but may decide to have an internal staff member trained as an MP. The internal person often belongs to the maintenance/custodial staff, because of this person's knowledge of the buildings.

STEP 5

Develop Management Plan and Recommend Response Actions

Why: AHERA requirement

Primary Decision-maker: Management Planner (MP)

What Happens:

The MP gives an LEA recommendations for response actions which reflect the condition of ACM and the potential for human exposure to asbestos fibers. The MP must provide a separate set of recommendations for each building owned or used by the LEA. The recommendations should include project specifications (i.e. blueprints which show the project area and which explain the method(s) to be used as the response action for the project area).

STEP 6

Screen Management Plan

Why: Optional Step for LEA

Primary Decision-maker: DP

What Happens:

The DP looks over the management plan for compliance with federal and state requirements, and assesses recommendations on a technical and financial level.

The intensity of LEA review ranges from cursory to in-depth and technical. This review potentially includes a professional second opinion. In addition, 12 states require or recommend some type of third-party monitor for management plans and abatement.

FIGURE 1

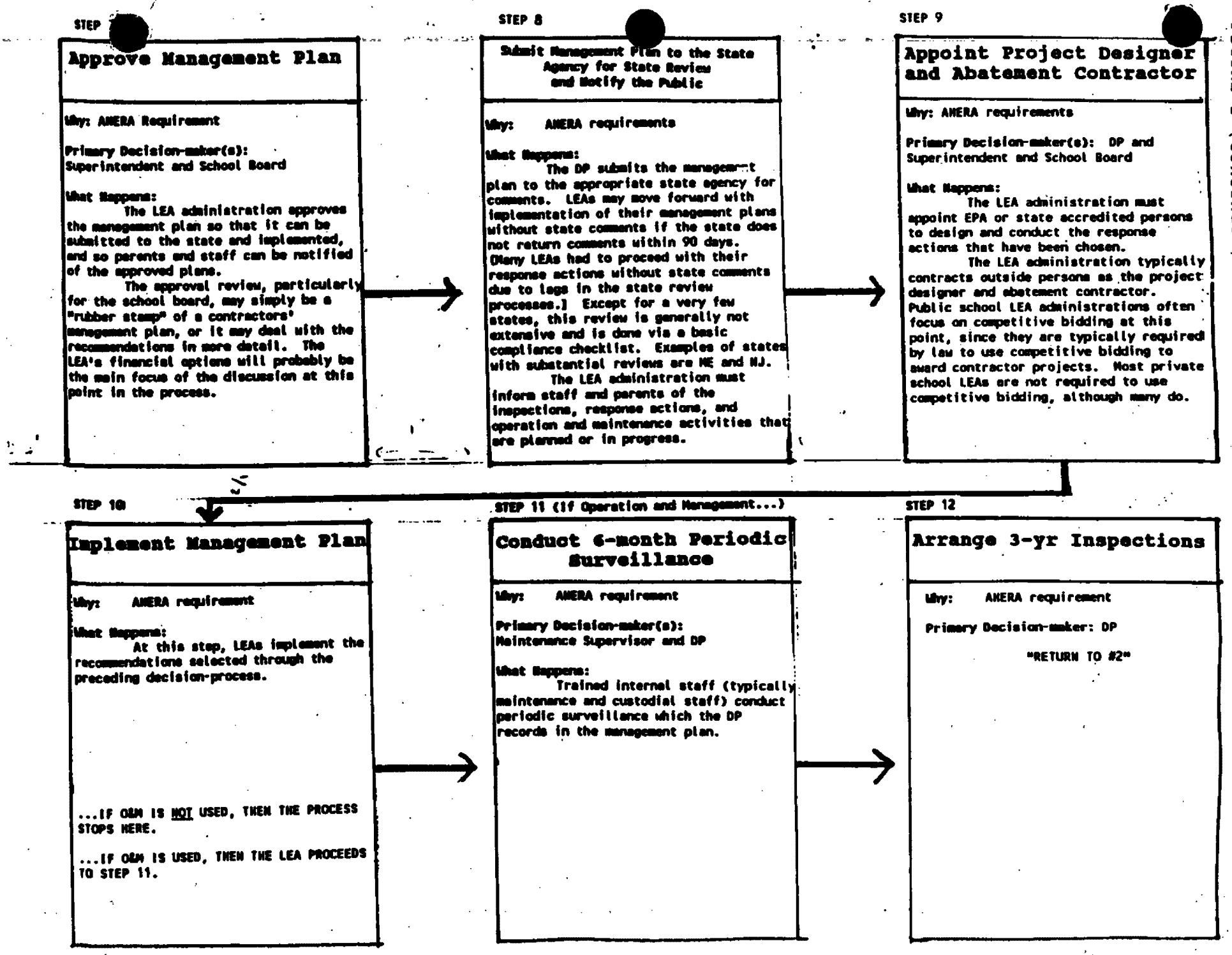

FIGURE 1 (Continued)

ASBESTOS SPECTRUM

	One fiber can kill	Keep low levels low	Most fibers are safe
Approach to asbestos control	remove it	identify, manage in place, remove when necessary	ignore it
Fiber types	all fiber types dangerous	fiber types treated equally, watching evidence on chrysotile	chrysotile much less serious than other types
Exposure	any exposure is a hazard	occupant exposure less serious than worker exposure	some worker exposure of concern
Safe level	no "safe" level	no "safe" level can now be established	acceptable risk standard should be established

Where interested parties are located on the spectrum

EPA

labor unions

health association (e.g., White Lung)

States
Schools

National Asbestos Council

former asbestos product manufacturer

Building Owners and Managers

Mortgage Bankers

media

FIGURE 2

FIGURE 3